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ABSTRACT

Besides their primary mission of providing education to the students of North Dakota, the 11 colleges and universities in the state represent an important "industry" which generates substantial income to the businesses and people of the state. Total college-related spending in North Dakota was $76 million during the 1973-1974 school year. This included purchasing supplies, materials, equipment, buildings and services, spending by faculty, staff, students, and visitors. The state appropriated about $36 million in support of higher education during the same period. Thus, for each $1 the state contributed to higher education, the colleges and universities returned $2.10 to the economy of North Dakota. Although limited, the Financial analysis data indicates that college related sources are an important source of credit in the state. Time and demand deposits have expanded the credit base in commercial banks as well as savings and loan associations and credit unions. (JMF)

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ECONOMIC IMPACT OF HIGHER EDUCATION IN NORTH DAKOTA

U S DEPARTMENT OF HEALTH, EDUCATION & WELFARE
NATIONAL INSTITUTE OF EDUCATION

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June, 1975

North Dakota Economic Studies, Number 10

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Regrettably, however, the authors must assume responsibility for any errors in interpreting or analysis of the data.

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CHAPTER 1

HIGHLIGHTS

The following principal findings were made in this study:

1) Total college-related spending in North Dakota for the 1973-74 school year was found to be $75.8 million. Of that amount, the eleven public institutions of higher education in North Dakota spent $23.2 million on supplies, materials, equipment, buildings and services from North Dakota businesses.
2) The faculty and staff at those schools spent $26 million in the state during the 1973-74 school year. Of that amount, $8.3 million was spent on housing; $6.2 million was spent on groceries; and $11.5 million was spent on other goods and services.
3) Students at the eleven colleges and universities spent approximately $28 million in the 1973-74 school year. Of that amount, about $5 million was spent on private housing; $9.3 million was spent on groceries; and $13.7 million was spent on other goods and services. Total faculty, staff and student spending of $54 million was reduced by $4 million to remove on-campus spending.
4) Visitors to students during the 1973-74 school year spent about $2.1 million during their visits. Fraternities and sororities spent $1/2 million.
5) For each dollar the state appropriated to higher education, the colleges and universities returned $2.10 to the economy of North Dakota. The ratio of in-state spending to state aid was greater than 1 for each of the eleven schools.

6) Total college-related spending of $75.8 million provided North Dakotans with 10,600 jobs in addition to the 4,500 full-time jobs at the schools. Thus, the eleven schools generated 15,100 jobs in the state.

7) The credit base of the North Dakota financial community was found to have been increased by $18 million due to the deposits of the institutions of higher education, their students and faculty and staff.

8) Finally, although college property is largely tax exempt, the property taxes paid by college-related persons and the increase in land values due to the institutions have likely offset the $3.8 million of local-government costs attributable to the eleven schools.

CHAPTER 2

INTRODUCTION

The influence of higher education on the State of North Dakota is multifaceted. Private individuals making decisions with respect to the allocation of their resources are influenced by the return they expect from an investment in higher education. They weigh the costs of attending an institution of higher education, including tuition, room and board, other expenses and foregone earnings, against the expected future returns from attending college. To the individual, it is a human capital investment decision.

Presumably, the individual carries out this cost-benefit calculation based on the best available information and makes a rational choice.

The state legislators and ultimately their constituents also make decisions regarding higher education in the state. They have knowledge of the costs of providing higher education to the people of North Dakota. Against these costs, these decision makers must attempt to estimate the benefits accruing to the state because of the presence of the colleges and universities in North Dakota. Although these benefits are difficult to measure, they include direct financial returns to individuals in the state in the form of increased earning potential over their lifetime as well as nonmonetary returns. For example, nonmonetary returns of a college education

include decisions on family size, participation in illegal activities and other social, political and economic attitudes. Further, there are both private benefits (those accruing to the individual being educated) and social benefits (those that cannot be collected by the individual and thus accrue to society as a whole) within the monetary and nonmonetary returns categories.

The principal goal of this study within the full range of benefits of higher education is limited. That is, only the economic impact of local expenditures on goods and services that occur because the college or university is in North Dakota is considered. Spending by students, faculty and staff of North Dakota colleges and universities would not entirely vanish if all North Dakota colleges and universities were to shut their doors. Some students, faculty and staff would remain in North Dakota in other capacities and continue to participate in the North Dakota economy, as would be true for employees if a given business closed its doors. This study does not attempt to provide a "net impact statement," i.e., the current economic impact less the economic impact of spending by those who would remain if all North Dakota colleges and universities were closed. Rather, this report will measure the economic impact that the colleges and universities currently have on North Dakota and thus is a "gross impact statement."

Moreover, this report is static since it measures the economic impact for only a single year, the 1973-74 school year.

The short run nature of the study also neglects the human capital impact. Thus, the increase in productivity that accrues to North Dakota college and university students because of their education is only briefly mentioned. This human capital impact is important to the economy of North Dakota as the influence of a college degree will affect the individual throughout his lifetime. The other major limitation of this study is its narrow economic view. There are various social benefits that society in North Dakota and elsewhere receives from the educational mission of the North Dakota institutions of higher education. Foremost among these benefits is the greater understanding of the nature of man, his environment and the society in which the student will function throughout his life.

Despite the limited scope of this study, there are several benefits to understanding the immediate economic impact of higher education:

1) The study can improve community-institution relations by revealing the interrelationships the town and the college or university share.
2) Local political leaders can be made more aware of the tax burden and tax revenue benefits that the educational institution generates.
3) Faculty, staff and students can be made more aware of their immediate contribution to their local communities and the

state's economy.

4) State political leaders and the general state population can see that the state's immediate outlay of funds in support of higher education does not disappear; rather, the schools return to the North Dakota economy more than the state invests.

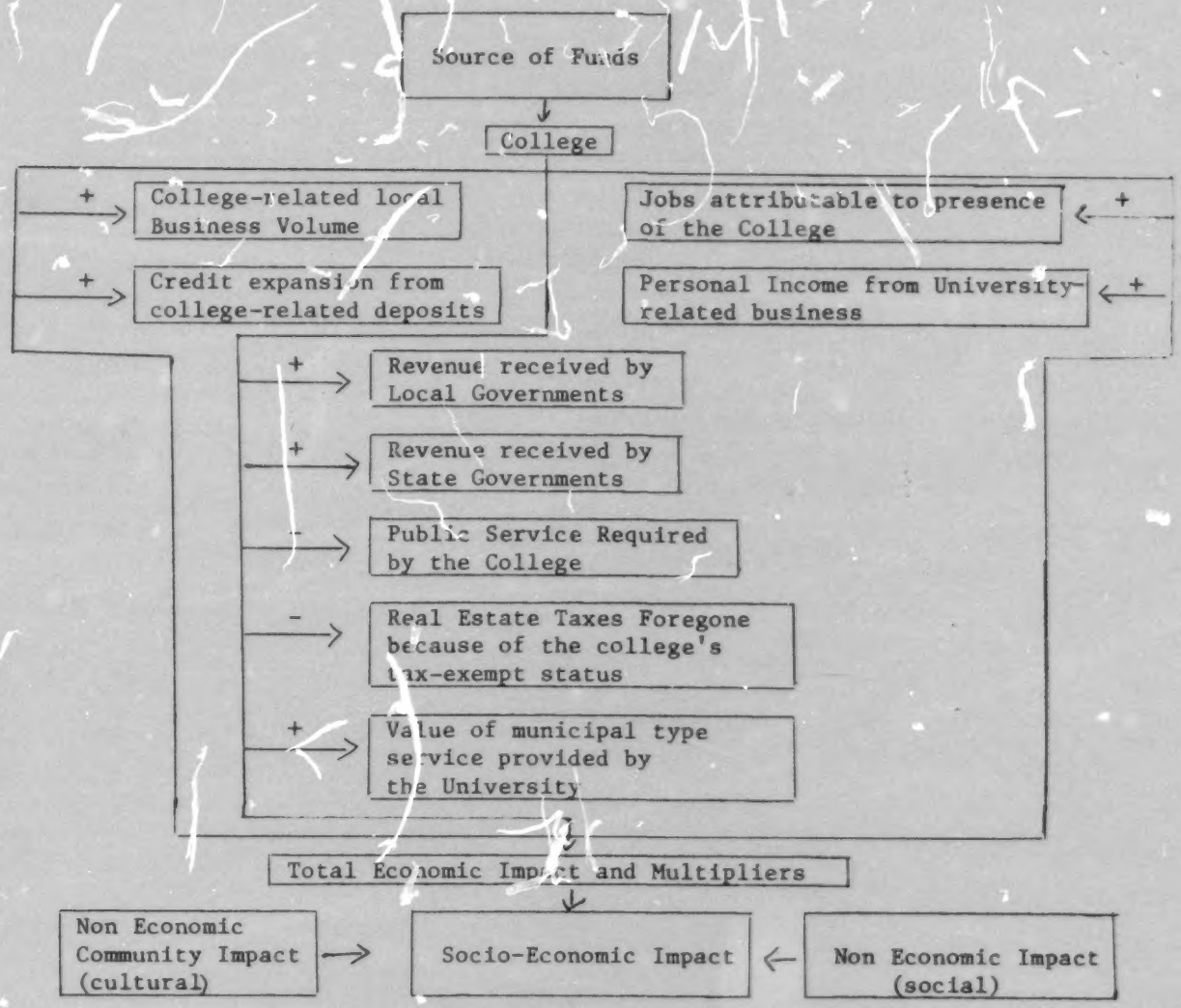
A diagram representing the nature of the impact study undertaken for the eleven North Dakota public colleges and universities is presented in Figure 2-1. This study follows the methodology presented in John Caffrey & Herbert M. Isaacs, Estimating the Impact of a College or University on the Local Economy (American Council on Education, 1971). This study deviates from the Caffrey-Isaacs method in two fundamental areas. First, most of the estimates of spending patterns are derived from mail surveys or personal interviews. The Caffrey-Isaacs study suggests the use of indirect measurement methods for most variables. Second, this study is concerned with a statewide system of public colleges while the Caffrey-Isaacs study focused on a single college and its impact on the local economy.

Throughout this study the following abbreviations for the state colleges and universities will be employed.

Abbreviation	Institution
1. UND	University of North Dakota
2. NDSU	North Dakota State University
3. DSC	Dickinson State College

FIGURE 2-1

SCHEMATIC REPRESENTATION OF THE IMPACT OF A NORTH DAKOTA COLLEGE ON THE NORTH DAKOTA ECONOMY.



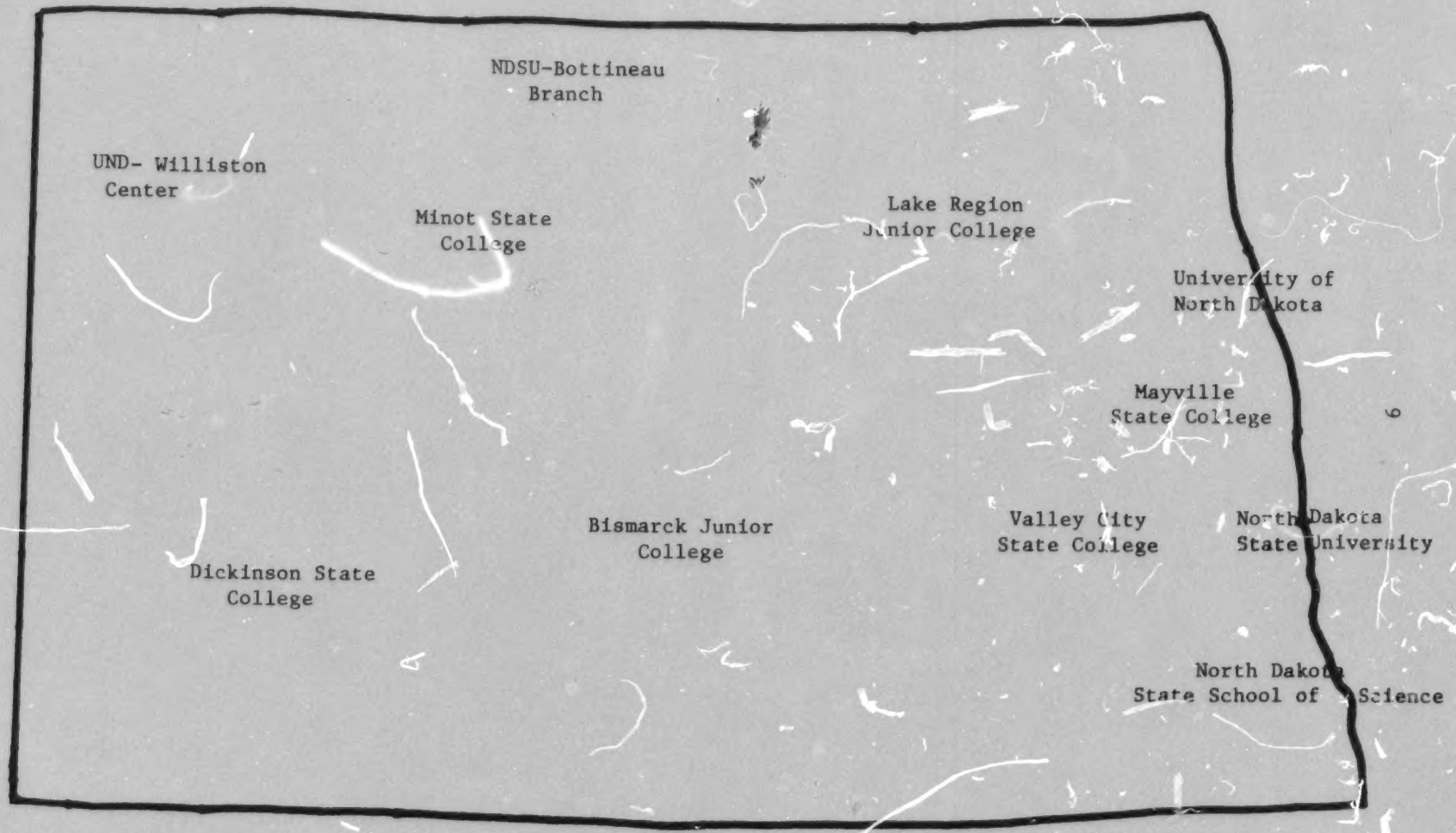
Abbreviation	Institution
4. MaSC	Mayville State College
5. MiSC	Minot State College
6. VCSC	Valley City State College
7. NDSSS	North Dakota State School of Science
8. BJC	Bismarck Junior College
9. LRJC	Lake Region Junior College
10. WC	Williston Center - UND
11. BB	Bottineau Branch - NDSU

Figure 2-2 shows locations of the eleven schools.

Finally, in order to avoid burdening the reader with excessive detail, statistical tests of significance, subsidiary data, and copies of survey forms have been relegated to a Statistical Supplement. A copy of that Supplement may be obtained by writing to the Bureau of Business and Economic Research, University of North Dakota.

FIGURE 2-2

LOCATIONS OF THE PUBLIC INSTITUTIONS OF HIGHER EDUCATION IN NORTH DAKOTA



CHAPTER 3

THE PUBLIC INSTITUTIONS OF HIGHER EDUCATION IN NORTH DAKOTA

Before the economic impact of higher education is estimated, this chapter will provide a brief description of the public institutions of higher education in North Dakota.

Land and Buildings

In 1972 North Dakota colleges and universities held over 10,000 acres of land of which one-third was located on the campuses proper. The remainder was experimentation farm land used by NDSU and biological research areas held by UND. In 1972, this land was valued at just under $7 million dollars.

The North Dakota college and university physical plants in 1972 consisted of 293 buildings with 8,328,732 square feet of space. The 1972 replacement value for all buildings was just over 141 million dollars. The land holdings and the buildings that comprise the physical characteristics of each institution are shown in Tables 3-1, 3-2, and 3-3.

Student Body - General Characteristics

As shown in Table 3-4, North Dakota's two universities, four state colleges and five junior colleges had 26,561 students enrolled for the fall, 1973 school term. Of this total, 22,401 students were considered full-time students. Slightly over 3,600 enrolled students were drawn from outside North Dakota to the seven public institutions of higher

TABLE 3-1

EXTENT AND ESTIMATED VALUE OF COLLEGE LAND HOLDINGS,
BY LOCATION OF LAND, 1972

	Institution	On Campus Proper Acres	On Campus Proper Value	Within One Mile Radius Acres	Within One Mile Radius Value	More Than One Mile Radius Acres	More Than One Mile Radius Value	Total Acres	Total Value
					$				
Public 4-Year	NDSU	2,306.7	$4,104,125	--	--	6,192.0	$ 805,737	8,498.7	$4,909,862
	UND	320.6	488,350	--	--	906.0	115,000	1,226.6	603,350
	DSC	82.7	82,700	--	--	--	--	82.7	82,700
	MaSC	43.3	100,720	11.2	6,416	--	--	54.5	107,136
	MiSC	103.0	111,750	--	--	--	--	103.0	111,750
	VCSC	64.0	191,000	30.0	30,000	--	--	94.0	221,000
	Total	2,920.3	$5,078,645	41.2	$36,416	7,098.0	$920,737	10,059.5	$6,035,798
Public 2-Year	BJC	35.12	$ 70,240	45.24	$90,480	--	--	80.36	$ 160,720
	NDSU-BB	35.0	70,000	--	--	--	--	35.0	70,000
	LRJC	70.0	7,000	66.7	10,000	--	--	136.7	17,000
	UND-WC	80.0	80,000	--	--	--	--	80.0	80,000
	NDSSS	125.0	404,703	--	--	--	--	125.0	404,703
	Total	345.12	$631,943	111.94	$100,480	--	--	457.06	$732,423
	Total All Public Institutions	3,265.42	$5,710,588	153.14	$136,896	7,098.0	$920,737	10,516.56	$6,768,221

Source: Physical Facilities at North Dakota Institutions of Higher Education, Fall Semester, 1972, Comprehensive Planning Studies, North Dakota Higher Education Facilities Commission.

TABLE 3-2

GROSS AREA OF COLLEGE BUILDINGS BY OWNERSHIP, 1972

	Institution	Gross Sq. Ft. Owned By Institution # Bldgs.	Square Feet	%	Gross Sq. Ft. Not Owned By Institution # Bldgs.	Square Feet	%	Total Gross Sq. Ft. Used By Institution # Bldgs.	Square Feet
Public 4-Year	NDSU	64	2,262,662	97.2	1	64,696	2.8	65	2,327,358
	UND	91	2,888,304	100.0	1	695	.0	92	2,888,999
	DSC	17	425,898	100.0	-	-	-	17	425,898
	MaSC	17	347,253	95.2	4	17,531	4.8	21	364,784
	MiSC	18	528,348	100.0	-	-	-	18	528,348
	VCSC	25	472,971	100.0	-	-	-	25	472,971
	Total	232	6,925,436	98.8	6	82,922	1.2	238	7,008,358
Public 2-Year	BJC	3	117,849	80.4	2	28,681	19.6	5	146,530
	NDSU-BB	10	134,364	100.0	-	-	-	10	134,364
	LRJC	8	146,774	100.0	-	-	-	8	146,774
	UND-WC	-	-	-	4	92,952	100.0	4	92,952
	NDSSS	27	782,403	97.8	1	17,351	2.2	28	799,754
	Total	48	1,181,390	89.5	7	138,984	10.5	55	1,320,374
	Total All Institutions	280	8,106,826	97.3	13	221,906	2.7	293	8,328,732

Source: Physical Facilities at North Dakota Institutions of Higher Education, Fall Semester, 1972, Comprehensive Planning Studies, North Dakota Higher Education Facilities Commission.

TABLE 3-3

REPLACEMENT VALUE OF COLLEGE BUILDINGS, 1972

	Institution	Total Replacement Value: Non-Housing Buildings	Housing Buildings	Total
Public 4-year	NDSU	$20,547,969	$11,767,000	$32,314,969
	UND	33,848,133	20,577,363	54,425,496
	DSC	4,077,000	3,356,000	7,433,000
	MaSC	3,953,000	2,963,000	6,916,000
	MiSC	6,156,713	2,554,850	8,711,563
	VCSC	2,934,000	2,075,490	5,009,490
	Total	$71,516,815	$43,293,703	$114,810,518
Public 2-year	BJC	$ 2,181,493	$ 662,000	$ 2,843,493
	NDSU-BB	1,657,400	1,351,000	3,008,400
	LRJC	1,780,000	750,000	2,530,000
	UND-WC	1,472,000	105,000	1,577,000
	NDSSS	9,339,900	6,969,767	16,309,667
		$16,430,793	$9,837,767	$26,268,560
Total all Institutions		$87,947,608	$53,131,470	$141,079,078

Source: Physical Facilities at North Dakota Institutions of Higher Education, Fall Semester 1972. Comprehensive Planning Studies, North Dakota Higher Education Facilties Commission.

TABLE 3-4

FALL 1973 HEADCOUNT ENROLLMENTS IN PUBLIC INSTITUTIONS OF HIGHER EDUCATION IN NORTH DAKOTA

Institution	In-State Enrollment	Out-of-State Enrollment	Total
UND	6,425	1,849	8,274
NDSU	5,691	966	6,657
DSC	1,069	79	1,148
MaSC	499	48	547
MiSC	2,289	128	2,417
VCSC	910	62	972
NDSSS	2,723	391	3,114
BJC	1,691	19	1,710
LRJC	599	8	607
WC	511	57	568
BB	498	49	547
Total	22,905	3,656	26,561

Source: Fall 1973 Enrollments at North Dakota Institutions of Higher Education; State Board of Higher Education, March, 1974, Table 1 and 7.

education in the state. About 40 percent (1,493) of these out-of-state students came from Minnesota. Other areas accounting for 100 or more students were South Dakota (254), Canada (187), Montana (184) and Illinois (100).

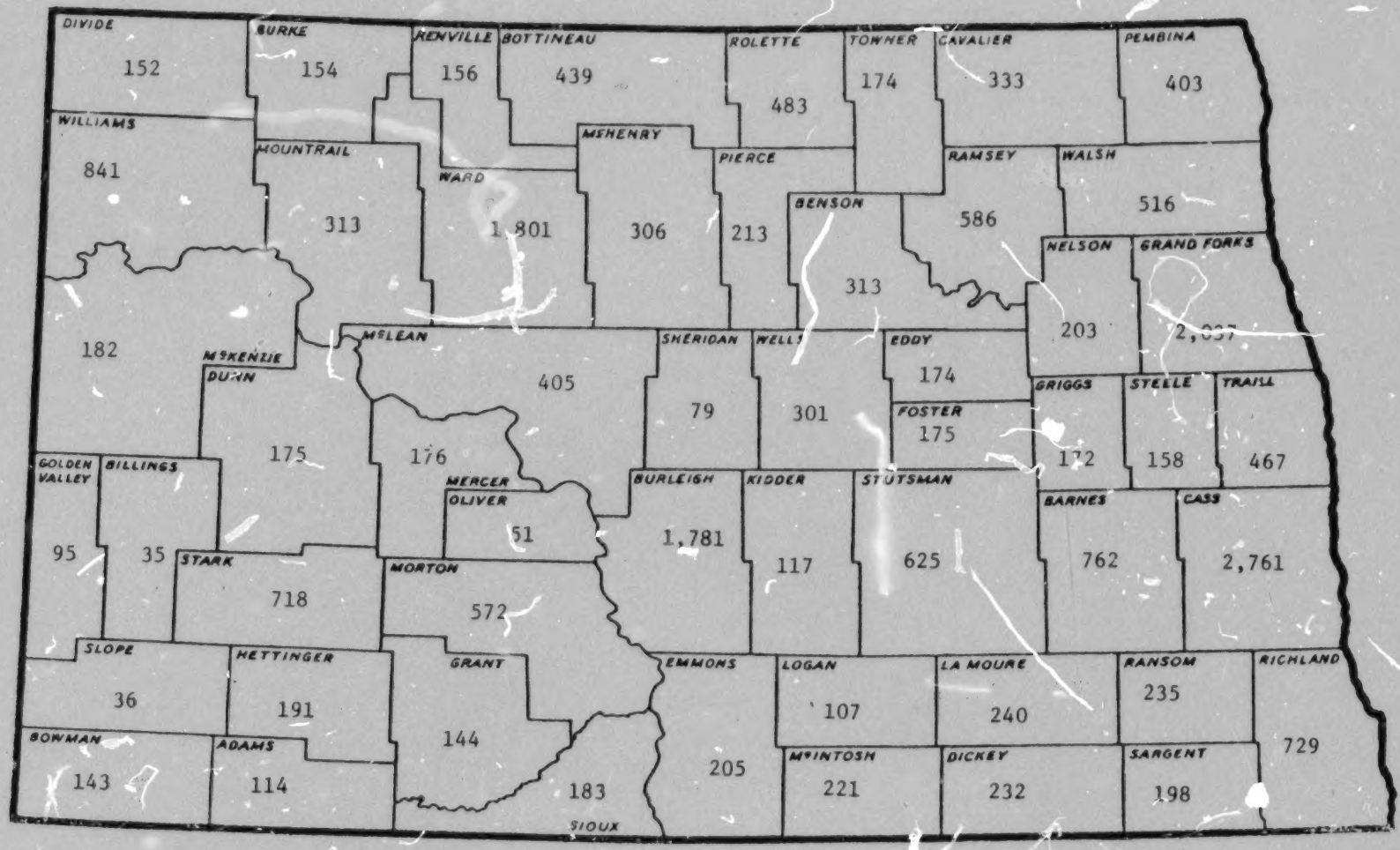
Almost ninety percent of the students enrolled in North Dakota public colleges and universities came from North Dakota. The distribution of these students by home county is shown in Figure 3-1. The counties providing more than 500 students to public higher education institutions in 1973 were Barnes (762), Burleigh (1,781), Cass (2,761), Grand Forks (2,037), Morton (572), Ramsey (586), Richland (729), Stark (713), Stutsman (625), Walsh (516), Ward (1,801), and Williams (841).

The 1973 student population at North Dakota public colleges and universities was 2.58% American Indian, .37% American Black, .34% Oriental-American, .1% Spanish Surname American, 95.77% American White, and .85% other. Males (15,380) outnumbered females (11,058), and one out of every five students was married. Veterans of U.S. military service accounted for one out of every ten North Dakota college and university students.

Most students lived in private rental housing off-campus (9,652). Dormitory living followed closely with 9,290 students choosing this type of residence. Living at home (6,151) and campus married housing (1,345) were the other living accommodations chosen by students.

FIGURE 3-1

FALL HEADCOUNT ENROLLMENTS BY COUNTY IN NORTH DAKOTA
PUBLIC INSTITUTIONS OF HIGHER EDUCATION
1973



Source: Fall, 1973 Enrollments at North Dakota Institutions of Higher Education, State Board of Higher Education, March, 1974.

Faculty and Staff

To perform their educational mission, each institution requires teaching faculty, administrators, researchers and supporting staff members. The North Dakota public colleges and universities employed 2,138 full-time faculty and administrators and 2,447 full-time staff members in 1973. The staff component includes jobs in maintenance, clerical services, food services, medical services, and other areas that support the teaching and research being carried on by the institutions. Additionally, there are many part-time faculty and staff members as well as student assistants who are employed by the institutions. However, this study only considers the impact of spending by full-time faculty and staff.

The Educational Mission

Each of the eleven public institutions of higher education is engaged in instruction and research with the bulk of the research activities carried on at the two universities. It is interesting to note, even briefly, the wide range of educational opportunities available in North Dakota. For example, Minot State College offers a four-year program leading to the degree of Bachelor of Science in Education, Technology, or Nursing, and the Bachelor of Arts Degree. In addition, it offers the degree of Masters of Science in Speech Correction and in Education of the Deaf. The Associate of Arts degree is offered in Law Enforcement.

The North Dakota State School of Science at Wahpeton offers courses in three divisions:

1) Arts, Science and Pre-professional (e.g. english, economics, mathematics, etc.)
2) Business Division (accounting, data processing, office machines, etc.)
3) Technical Division and Trades Division (practical nursing, automobile mechanic, diesel and small engine repair, welding, etc.)

The University of North Dakota and North Dakota State University offer a wide variety of courses and degree programs. NDSU or UND or both offer programs leading to the Bachelor of Science and Bachelor of Arts in the Colleges of Agriculture, Arts and Sciences, Business and Public Administration, Home Economics, Engineering, Architecture, Pharmacy, Fine Arts, Human Resources Development, and the Center for Teaching and Learning. In addition, advanced degrees (masters and the doctorate) may be obtained in a wide variety of fields. Finally, the School of Law, the School of Medicine as well as the College of Nursing provide invaluable training to those who will provide many of the future legal and medical services in North Dakota.

Research Agencies

Faculty and other researchers work through a variety of research centers at the colleges and universities. A brief list of UND and

NDSU research agencies include the Bureau of Business and Economic Research, Bureau of Governmental Affairs, the Engineering Experiment Station, the Evaluation Center for Exceptional Children, North Dakota Geological Survey, North Dakota Water Resources Institute, the Social Science Research Institute, the Agricultural Experiment Station and Cooperative Extension Services, the Institute for Ecological Studies, and the Upper Great Plains Transportation Institute.

Social and Cultural Centers

Each of the eleven public institutions acts as a social and cultural focal point for their respective communities. Inter-collegiate athletics in hockey, football, basketball, track, wrestling, and others provide entertainment throughout the year to faculty, staff, students and all sports enthusiasts of North Dakota. Moreover, intramural athletics offer physical exercise and the competitive experience for many North Dakota students.

A wide variety of concerts, plays, art shows, ballets, recitals, etc. are part of the college or university experience. These provide many opportunities for North Dakotans who find enjoyment in the fine arts.

Student Fees

Education costs to the student vary with courses of study and living arrangements. However, a typical undergraduate would have had the following basic expenses for the 1973-74 school year at each institution.

Institution	N.D. Resident Tuition Fees	Non-Resident Tuition Fees	Room & Board	Books & Supplies
1. UND	$456	$1,184	$900	$130
2. NDSU	$435	$1,164	$831	*
3. DSC	$406	$ 953	$666	*
4. MaSC	$384	$ 753	$624	$ 60
5. MiSC	$405	$ 852	$650	*
6. VCSC	$396	$ 933	$645	*
7. NDSSS	$369	$ 906	$640	*
8. BJC	$300-400	$ 550	$820	*
9. LRJC	$320	$ 670	$650	*
10. WC	$396	*	$665	*
11. BB	$387	$ 666	$570	*

These are estimates from the respective latest college bulletins - they may have been revised since this study was proposed.

* Data not available from the college bulletin.

CHAPTER 4

INSTITUTIONAL EXPENDITURES

In order to provide education, the colleges and universities must purchase the services of faculty, staff and administrators as well as a wide variety of other services and goods provided by business and persons outside the institutions. The subsequent chapter examines the impact of the spending by institutional employees. Here, an estimate will be made of the goods and services that the eleven public schools of higher education purchase from North Dakota residents and businesses.

The sources and uses of funds for the eight schools responding to the survey are shown in Table 4-1. As can be seen, state appropriations account for the largest single source of income to the public institutions of higher education (34.8%) whereas the largest expenditure was for salaries and wages (61.8%).

Methodology

In order to estimate the amount of non-salary institutional expenditures going to persons inside the state, the following accounts at UND were sampled: Fees and Services, Supplies and Materials, Equipment, Construction, and Alumni, Student Organizations and Dormitories for which the institution acts as a fiscal agent. Unfortunately, college and university vouchers are not on the computer and, considering the massive numbers of vouchers for a single year and the heterogeneous

TABLE 4-1

SOURCES AND USES OF FUNDS BY EIGHT PUBLIC INSTITUTIONS OF HIGHER EDUCATION IN NORTH DAKOTA, FY1973-74

	Amount (Millions)	Percent of Total
Sources of Funds		
State Appropriations	$17.0	34.8%
Student Fees	6.8	13.6
Endowment Income	.4	.8
Gifts, Grants and Contracts	7.2	14.4
Auxiliary Enterprises	11.3	22.6
Student Aid	3.1	6.2
Other	4.2	8.4
Total	$50.0	100.0%
Uses of Funds		
Salaries and Wages	$28.9	61.8%
Fees and Services	5.6	12.0
Supplies and Materials	7.5	16.0
Student Aid	1.6	3.4
Other	2.7	5.8
Total	$46.8	100.0%

Source: Survey data from UND, DSC, MaSC, NDSSS, LRJC, BJC, WC, and BB.

Notes: Totals will not necessarily equal the individual items due to rounding or because not all funds are spent or both. Also, these data do not include the sources and uses of funds in the plant fund accounts. FY 1973-74 refers to the year ending June 30, 1974.

nature of the vouchers, it was not possible scientifically to sample vouchers to obtain the proportion of institutional spending done in the state. Thus, as has been done for similar studies at other schools, the vouchers at UND for a single month (April 1974) were sampled. April was selected as university officials felt it was a reasonably typical month. The sampled vouchers were then recorded as either an in-state or an out-of-state expenditure. Transfers between departments or parts of the university were treated as out-of-state expenditures to avoid double counting. As construction expenditures are lumpy, a month's sampling of those expenditures would be highly questionable. As a result, a survey of UND's principal contractors was undertaken to determine the proportion of their purchases done in North Dakota. The results of that survey corresponded to similar surveys in other states (for example, see The Impact of the University of Pittsburgh on the Local Economy, Educational Systems Research Group, Washington, D. C., 1972). Specifically, about 50% of the construction spending represents labor costs of which 90% goes to North Dakota workers. Of the remaining construction expenditures, approximately 70% is for supplies and materials purchased in North Dakota. Thus, about 80% (50% X 90% plus 50% X 70%) of the construction spending is done in state. For purposes of this study, this was reduced to 75% in order to be conservative. No reasonable estimate could be made for the proportion of in-

state spending for the equipment and the other category of the Plant fund. As a result, they were ignored, adding a further conservative bias to the impact of institutional spending.

The following percentages for in-state spending were obtained from UND records and the survey of contractors:

Accounts	Percent of Spending done in North Dakota
Fees and Services, Supplies and Materials and Equipment	53.2%
Alumni, Student Organizations and Dorms for which the University acts as a fiscal agent	32.2%
Construction	75.0%

Results

These percentages were then applied to total spending in each of the accounts for each of the eleven institutions where data were available. The results are shown in Table 4.2. As can be seen, total institutional spending for the eleven colleges and universities in these three areas was $39.6 million for FY 1973-74 and of that amount $23.2 million or 59% was spent in North Dakota. This $23.2 million represented income to North Dakota businesses and individuals which they allocated between saving and spending. This spending, in turn, generated additional income and spending in North Dakota and so on.

TABLE 4-2

EXPENDITURES BY PUBLIC INSTITUTIONS OF
HIGHER EDUCATION IN NORTH DAKOTA, FY 1973-74

Institution	Fees & Services, Supplies & Materials & Equipment 53.2% In-State		Alumni, Student Organizations, & Dorms for which the Institution acts as a Fiscal Agent 32.2% In-State		Construction 75% In-State		Totals	
	Total	In-State	Total	In-State	Total	In-State	Total	In-State
UND	$9,931,107	$5,283,349	$1,677,265	$ 540,079	$7,471,517	$5,603,638	$19,079,889	$11,427,066
NDSU	8,800,000	4,681,600	n/a	n/a	1,147,026	860,270	9,947,026	5,541,870
DSC	425,323	226,272	23,040	7,419	154,737	116,053	603,100	349,744
MaSC	527,696	280,734	40,000	12,880	80,765	60,574	648,461	354,188
MiSC	1,509,937	803,286	n/a	n/a	798,660	598,995	2,308,597	1,402,281
VCSC	627,892	334,039	n/a	n/a	375,816	281,862	1,003,708	615,901
NDSSS	2,225,840	1,184,147	74,958	24,136	806,811	605,108	3,107,609	1,813,391
BJC	581,350	309,278	20,637	6,645	898,929	674,197	1,500,916	900,120
LRJC	309,901	164,867	0	0	0	0	309,901	164,867
WC	363,397	193,327	13,481	4,341	2,950	2,212	379,828	199,880
BB	400,144	212,877	84,584	27,236	192,123	144,092	676,851	384,205
Total	$25,702,587	$13,673,776	$1,933,965	$622,736	$11,929,334	$8,947,001	$39,565,886	$23,243,513

Source: Survey data and information supplied by the State Board of Higher Education

CHAPTER 5

FACULTY AND STAFF EXPENDITURES

Along with their primary responsibilities of teaching, maintaining facilities or administration, faculty and staff at the colleges and universities of North Dakota also make their presence felt in the state through their purchases of goods and services. North Dakota public college and university full-time employees received $41.6 million in total income from the eleven institutions in Fiscal Year 1973-1974. A sampling of faculty and staff at UND and DSC was undertaken in the spring of 1974 to determine on what this income was spent and what part of it was spent in North Dakota. The detailed methodology, response rates and other information relevant to this sampling are described in the Statistical Supplement.

Since some families earned additional income from outside the institution, all the spending estimates described in this chapter were adjusted downward so as to reflect only that portion of income earned from the institution. Table 5-1 indicates the percentage of total household income attributable to college or university income for each institution.

Housing Expenditures

University and college employees spent the following amounts on housing during the 1973-74 school year:

TABLE 5-1

CONTRIBUTION OF UNIVERSITY AND COLLEGE INCOME TO TOTAL HOUSEHOLD INCOME OF UNIVERSITY AND COLLEGE EMPLOYEES

Institution	% Total Household Income Attributable to College or University Income
1. UND	73.8%
2. NDSU	77.2
3. DSC	77.1
4. MaSC	78.0
5. MiSC	78.0
6. VCSC	82.6
7. NDSSS	78.0
8. BJC	80.7
9. LRJC	80.6
10. WC	79.1
11. BB	74.9

Source: Estimates from sample survey response at UND and DSC.

1.	Private rental in North Dakota	$2,247,000
2.	Mortgage payments in North Dakota	$3,719,000
3.	Other housing in North Dakota (utilities, repairs and miscellaneous housing)	$2,382,000
	Total housing	$8,348,000

Table 5-2 lists the estimates of housing expenditures by faculty and staff at each institution. As noted above, these are estimates of housing expenditures made in North Dakota only and the expenditures have been adjusted by the percentage of household income that is attributable to university or college income. (See Statistical Supplement for detailed methodology.)

Based on the survey results from UND and DSC, other characteristics of the housing demands by university and college employees are listed in Table 5-3.

The most surprising result of the survey was the high percentage of mortgage payments made to financial institutions outside North Dakota by DSC faculty and staff. There does not appear to be any rational for this result, but it was kept because it was a very conservative result with respect to the impact of employee spending in North Dakota.

TABLE 5-2

HOUSING EXPENDITURES BY UNIVERSITY AND COLLEGE EMPLOYEES, 1973-74 SCHOOL YEAR

Institution	Private Rental in N.D.	Mortgage Payment in N.D.	Other Housing costs in N.D.	Total in North Dakota
1. UND	$1,129,000	$1,337,000	$ 878,000	$3,344,000
2. NDSU	780,000	1,193,000	756,000	2,729,000
3. DSC	20,000	129,000	82,000	231,000
4. MaSC	12,000	76,000	48,000	136,000
5. MiSC	36,000	237,000	150,000	423,000
6. VCSC	15,000	97,000	59,000	171,000
7. NDSSS	206,000	331,000	209,000	746,000
8. BJC	17,000	113,000	70,000	200,000
9. LRJC	14,000	90,000	56,000	160,000
10. WC	8,000	53,000	33,000	94,000
11. BB	10,000	63,000	41,000	114,000
Total	$2,247,000	$3,719,000	$2,382,000	$8,348,000

Source: Estimates from sample survey at UND and DSC. See Statistical Supplement for standard errors of estimates.

TABLE 5-3

MISCELLANEOUS HOUSING CHARACTERISTICS

Characteristic	UND	DSC
1. Location of Residence		
a. in North Dakota	97%	100%
b. outside North Dakota	3%	0%
2. Type of Housing		
a. private rental	25.6%	7.9%
b. college rental	9.6%	4.8%
c. own home	62.5%	84.1%
d. relative's home	1.8%	3.2%
3. Mortgage Location (for homeowners)		
a. in North Dakota	87%	75%
b. outside North Dakota	13%	25%

Source: Survey data.

Food Expenditures

Faculty and staff spending for food in grocery stores was estimated from the surveys at UND and DSC. The survey data provided an estimate of the average (mean) total expenditures per month on groceries by faculty and staff. The total spending on groceries (as noted above) was reduced by two factors:

1. the expenditures on groceries were multiplied by the percentage of household income attributable to college or university income and
2. the expenditures on groceries outside North Dakota were removed.

Total 1973-74 school year grocery expenditures by faculty and staff in North Dakota attributable to college or university income was $6,159,000. Table 5-4 lists the totals by institution and the percentage of food purchases in North Dakota. Again detailed methodology is relegated to the Statistical Supplement.

All Other Expenditures

Following the same methodology employed in estimating grocery expenditures, faculty and staff spending for all goods and services other than housing and groceries were estimated. Once again, these were expenditures in North Dakota and attributable to university or college income only.

TABLE 5-4

FOOD PURCHASES IN GROCERY STORES BY NORTH DAKOTA COLLEGE AND UNIVERSITY EMPLOYEES, 1973-74 SCHOOL YEAR

Institution	% Grocery Purchases in N.D.	Average per month in N.D.	Total Grocery Purchases in N.D.
1. UND	98.1%	$101	$2,388,000
2. NDSU	98.3	113	1,943,000
3. DSC	99.9	133	203,000
4. MaSC	99.9	134	116,000
5. MiSC	99.9	134	364,000
6. VCSC	99.8	141	135,000
7. NDSSS	98.3	116	531,000
8. BJC	99.8	138	164,000
9. LRJC	99.8	138	131,000
10. WC	99.9	136	80,000
11. BB	99.9	130	104,000
Total			$6,159,000

Source: Estimates from sample surveys taken at UND and DSC.

Total "all other" expenditures were estimated to be $11,477,000 on this basis. The estimates by institutions and the percentage spent in North Dakota are listed in Table 5-5.

Summary of Faculty and Staff Expenditures

The aggregate income of $41.6 million received by full-time faculty and staff from college and university sources results in $26,000,000 in spending in North Dakota. The rest of the income goes to federal, state and local taxes, savings or checking account balances, or is spent out of the state. This allocation of aggregate income is summarized below:

1.	Spending on goods and services in North Dakota	$26,000,000
2.	Spending on goods and services outside North Dakota	1,400,000
3.	Federal income taxes paid (estimated as 20% of income)	8,320,000
4.	Local property taxes paid	2,090,000
5.	State income taxes paid	520,000
	Total spending and taxes paid	$38,330,000
6.	Additions to savings and checking account balances (estimated as a residual: aggregate income less spending and taxes paid)	3,270,000
	Total Aggregate Income	$41,600,000

TABLE 5-5

ALL OTHER EXPENDITURES BY NORTH DAKOTA FACULTY AND STAFF, 1973-74 SCHOOL YEAR

Institution	1973-74 % "All Other" Expenditures in N.D.	Average $/Month N.D. "All Other" Expenditures	Total $/Year N.D. "All Other" Expenditures
1. UND	93.9%	$179	$4,235,000
2. NDSU	93.0	214	3,664,000
3. DSC	95.9	258	393,000
4. MaSC	95.8	264	228,000
5. MiSC	95.8	261	715,000
6. VCSC	95.0	293	282,000
7. NDSSS	93.0	221	1,013,000
8. BJC	95.3	281	334,000
9. LRJC	95.3	281	266,000
10. WC	95.6	271	151,000
11. BB	95.6	271	196,000
Total			$11,477,000

Source: Estimates from sample surveys taken at UND and DSC.

CHAPTER 6

STUDENT EXPENDITURES

Introduction

Students are a highly visible group in the local business community. The number of young people shopping in local clothing stores and grocery stores, eating in local restaurants and frequenting local pubs and entertainment spots when the fall term begins is *prima facie* evidence of the significant impact of student spending on the economy of North Dakota.

This chapter will quantify the magnitude of student spending. The estimates are based on a survey of students at UND and DSC. Over 400 students at UND and 260 at DSC were contacted for a personal interview. As with the faculty and staff estimates, the UND data were assumed to be an adequate representation of the student body at NDSU because of the similarities in the two institutions and because of their location on the Minnesota border. NDSSS was also assumed to have student expenditure patterns similar to those at UND because of its similar geographical position. The other state colleges and junior colleges were represented by DSC student expenditure patterns because of similarities in the size and composition of the student bodies and/or because of a geographical location further away from neighboring states.

Where Students Live

Table 6-1 illustrates the diversity of residences preference by North Dakota college and university students.

TABLE 6-1

FALL 1973 HEADCOUNT ENROLLMENTS BY RESIDENCE*

Institution	Dormitory	At Home	Campus Married Housing	Other Off-Campus
1. UND	2,923	1,175	721	3,455
2. NDSU	2,092	850	415	3,172
3. DSC	544	315	26	263
4. MaSC	288	139	43	80
5. MiSC	631	1,027	33	727
6. VCSC	362	351	19	240
7. NDSSS	1,650	284	73	1,107
8. BJC	231	1,213	-	266
9. LRJC	239	267	7	95
10. WC	75	302	-	191
11. BB	255	228	8	56
Total	9,290	6,151	1,345	9,652

Source: State Board of Higher Education, Fall 1973 Enrollments at North Dakota Institutions of Higher Education, March 1974, p. 17.

* Note: The total enrollment in this table is 123 students less than in Table 3-4. This is attributable to error in the source tables.

The figures in Table 6-1 are for all enrollees. Since this study is primarily concerned with the impact of full-time students only, these figures have been revised downward for the spending analysis. Also, these revised figures were averaged with second semester enrollments and summer school enrollees to give the number of full-time "full-year" (11 month) students. Other off-campus housing was subdivided into private rental, own home, and fraternity or sorority.

Two comments are appropriate here. First, as shown in Table 6-2 a large percentage of the students at each college or university is drawn from its own county. In this case, the college or university is playing an important role in keeping the college age population of North Dakota in their home area where they purchase goods and services in local business establishments.

Throughout North Dakota, the colleges and universities are a catalyst for spending in businesses in the state. Without the colleges and universities of North Dakota, many of the students currently enrolled in North Dakota would attend institutions of higher education outside the state and take a considerable amount of purchasing power with them.

Housing Expenditures

This study estimates only the spending for off-campus housing. Any spending done by students for college dorms or other college housing is treated as a transfer payment that later shows up as an

TABLE 6-2

HOME COUNTY SAME AS SCHOOL COUNTY FOR STUDENTS
IN NORTH DAKOTA PUBLIC INSTITUTIONS
OF HIGHER EDUCATION

Institution	% of Students from Same County As Location of Institution
1. UND	25%
2. NDSU	30
3. DSC	38
4. MaSC	34
5. MiSC	50
6. VCSC	44
7. NDSSS	13
8. BJC	54
9. LRJC	37
10. WC	61
11. BB	25

Source: See Statistical Supplement

expenditure by the college or university for utilities, interest, payroll, etc. To avoid double counting, the spending by students for dorms or other college housing is not measured.

Total student expenditures for housing in the private market in North Dakota were $5,007,000 for 1973-74 academic year. Mortgage payments are not estimated because very few full-time students own their own homes and a reliable estimate was not possible. Table 6-3 lists the off-campus housing expenditures by students for each institution.

Grocery Purchases

To avoid double counting, only grocery purchases off-campus are considered since food purchased on campus in dorms or at the student union will be reflected in college and university expenditures. Total off-campus student spending for groceries in North Dakota during the 1973-74 school year was approximately $9,345,000. There was a large variation in grocery purchases/month by location of residence, with monthly purchases ranging from $7 per month for students living with relatives to $139/month for students who owned their own home. Student grocery and other purchases by residence at UND and DSC, as revealed in the sample survey of students at these two institutions, are shown in Table 6-4.

Table 6-5 lists the overall average spending by students for groceries per month and on an "annual" basis at each institution. The "annual" spending is based on the full-time, full-year (11

TABLE 6-3

STUDENT SPENDING FOR OFF-CAMPUS HOUSING, 1973-74 SCHOOL YEAR

Institution	Rent (Private)/Year in N.D.
1. UND	$1,701,000
2. NDSU	1,436,000
3. DSC	170,000
4. MaSC	52,000
5. MiSC	425,000
6. VCSC	140,000
7. NDSSS	830,000
8. BJC	90,000
9. LRJC	30,000
10. WC	81,000
11. BB	52,000
Total	$5,007,000

Source: Estimates from sample surveys at UND and DSC. See the Statistical Supplement for detailed methodology and standard errors of estimate

TABLE 6-4

AVERAGE AMOUNTS OF STUDENT NON-HOUSING SPENDING, 1973 74 SCHOOL YEAR

Expenditure	Private Rental	Dorm	Own Home	Relative Home	Fraternity or Sorority	Married Student Housing
			UND			
1. Groceries/month	$ 67	$11	$139	$ 7	$11	$ 93
2. % Groceries purchased in North Dakota	94%	97%	95%	95%	99%	98%
3. Other purchases per month	$ 90	$50	$180	$63	$86	$124
4. % all other in North Dakota	91%	83%	96%	87%	81%	96%
			DSC			
1. Groceries/month	$ 72	$36	$158	$ 8	$45	$ 80
2. % Groceries purchased in North Dakota	100%	100%	100%	100%	100%	100%
3. Other purchases per month	$105	$64	$85	$52	$63	$176
4. % all other in North Dakota	99%	93%	90%	100%	98%	100%

Source: Estimates from sample surveys at UND and DSC. See Statistical Supplement for details.

TABLE 6-5

STUDENT SPENDING FOR GROCERIES OFF-CAMPUS,
1973-74 SCHOOL YEAR

Institution	Grocery Expenditures in North Dakota Overall Average/Month	Annual Student Grocery Purchases in North Dakota
1. UND	$40	$2,569,000
2. NDSU	40	2,048,000
3. DSC	55	515,000
4. MaSC	55	281,000
5. MiSC	58	1,183,000
6. VCSC	55	420,000
7. NDSSS	35	913,000
8. BJC	64	659,000
9. LRJC	54	290,000
10. WC	62	312,000
11. BB	42	155,000
Total		$9,345,000

Source: Estimates from sample surveys at UND and DSC. See Statistical Supplement for standard errors and detailed methodology.

month) student body. For example, if the number of full-time students was 4,000 during the fall term, 3,000 during the spring term and 1,000 during the summer term and if the overall average of grocery expenditures was $50/month, the annual spending would be computed from equation 6.1:

$$6.1 \quad [9 \times (\$50) \times (\frac{4000 + 3000}{2})] + [2 \times (\$50) \times 1000] = \$1,675,000.$$

The "overall" averages are computed for each institution by computing a stratified mean for each school on the basis of the number of students in each type of residence. This gives the proper population weight to each type of residence average.

Other Expenditures

Following the same methodology as employed in computing grocery expenditures, student expenditures on autos, gasoline, clothing, etc. were estimated in the "all other" category. The results of this analysis are summarized in Table 6-6. Again, Table 6-4 lists the range of "other" expenditure monthly amounts by type of residence at UND and DSC. As shown, students at the eleven schools spent $13,669,000 on all other goods and services.

The relatively high monthly overall average for some institutions of all other expenditures is largely because of the relatively high proportion of off-campus residents and married students to total students for those schools.

TABLE 6-6

ALL OTHER EXPENDITURES BY N.D. STUDENTS, 1973-74

Institution	All other N. D. Expenditures/month per Student	% in N. D.	Annual Student All Other Expenditures
1. UND	$66	87.1%	$4,178,000
2. NDSU	65	87.0	3,282,000
3. DSC	70	96.2	654,000
4. MaSC	74	96.0	380,000
5. MiSC	69	96.9	1,406,000
6. VCSC	85	96.2	638,000
7. NDSSS	59	86.7	1,519,000
8. BJC	62	97.6	639,000
9. LRJC	63	95.9	341,000
10. WC	84	98.2	388,000
11. BB	66	93.8	244,000
Total			$13,669,000

Source: Estimates from sample surveys at UND and DSC. See Statistical Supplement for standard errors.

Summary

The direct impact of student expenditures on the demand for housing, groceries and other goods and services in North Dakota was approximately $28,000,000 during the 1973-74 school year. This represents an important and too often overlooked contribution students make to the economy of the state. In addition, students maintained savings and checking accounts in North Dakota. This impact on the financial sector will be investigated in Chapter 8. Furthermore, visitors to students during the school year spend money on food, motel-hotel, gasoline, gifts, etc. This will be investigated in Chapter 7 along with the impact of fraternity and sorority spending.

Finally, spending by faculty, staff and students at campus bookstores and food centers must be subtracted in order to avoid double counting. Table 6-7 shows the estimates of that spending for each college and university. As it was not possible to determine what part of spending in bookstores and food centers came from students and what part from faculty and staff, the amounts for each school are subtracted from the combined faculty, staff and student spending in the Summary and Conclusions Chapter.

TABLE 6-7

FACULTY, STAFF AND STUDENT SPENDING AT
BOOKSTORES AND FOOD CENTERS

Institution	Spending at Bookstores and Food Centers[a]
1. UND	$ 933,603
2. NDSU*	1,005,124
3. DSC*	173,334
4. MaSC	202,277
5. MiSC*	364, 937
6. VCSC*	146,760
7. NDSSS	658,781
8. BJC	120,896
9. LRJC	211,110
10. WC	73,204
11. BB	115,356
Total	$4,010,382

Source: Estimated for asterisk schools and sample data for the remainder.

[a] Note: Bookstore purchases were calculated on the basis of the annual rate for April, 1974, the survey date. This was done, rather than total bookstore purchases, for two reasons. First, student responses on the questionnaire indicated that they were not considering their substantial book expenses at the beginning of each semester. Second, a significant amount of bookstore purchases were made by departments at the schools and these purchases were eliminated from institutional spending through the sampling procedure.

CHAPTER 7

OTHER COLLEGE-RELATED SPENDING

There are several groups and events that account for college-related spending yet to be mentioned. They are the spending by visitors to students; alumni visitors to campus; the spending by others who attend athletic, cultural or social events on campus; and the spending by fraternity and sorority houses at UND and NDSU. Of these groups and events only the spending by persons visiting students and the spending of fraternity and sorority houses are quantified in this study.

Alumni, Athletic and Social Events

Athletic, social and cultural events on campus draw numerous alumni and other visitors to the local community. In turn, those visitors make purchases from the institutions for the events as well as purchases from local businesses during their visit. However, this spending is not considered here for two reasons. First, the revenues received by the colleges and universities at such events is spent by the institutions on wages, equipment, etc. to provide the events. As this institutional spending has previously been counted, it cannot be counted again. Second, although the spending by visitors at local businesses is a separate source of income, it was not possible to separate it from the visitors to students which is measured in the next section of this chapter.

Although spending by visitors during athletic, social, or cultural events is not quantified, it is important to note that these events play a major role in drawing people to the campuses. These visitors, besides adding to the spending and income of the state, receive non-quantifiable benefits from those events. That is, without the institutions of higher education, the people of North Dakota would be denied some opportunities to attend athletic events, plays, concerts, etc. One need only attend a hotly contested football, basketball or hockey game on campus to observe the satisfaction persons not associated with the colleges and universities receive from the presence of those institutions.

Visitors to Students

Visitors to students of North Dakota colleges and universities make expenditures in local businesses for gifts, motel-hotel accommodations, meals, drinks, etc. This section quantifies the spending by visitors in college towns using data from the student surveys. Students were asked to estimate the amount of spending done by their visitors. An "average" amount of spending by all visitors was then computed and used to estimate the total amount of spending by visitors to students at each college or university. Because of a wide variance in responses made by students at DSC, the combined sample mean for DSC and UND was employed for spending estimates of visitors at all schools except UND, NDSU, and NDSSS. The UND estimates were alone employed for these three schools. Table 7-1 lists the estimates of spending by visitors to students

at each institution. These estimates are likely to be conservative because the student surveys were made prior to the graduation exercise which is always an important attraction to student visitors. Notwithstanding, visitors to students at the eleven public institutions spent $2,112,000 during their visits.

TABLE 7-1

SPENDING BY STUDENT VISITORS DURING THE 1973-74 SCHOOL YEAR

Institution	Motel-Hotel	Food, Gas, Etc.	Total
1. UND	$106,000	$568,000	$674,000
2. NDSU	83,000	424,000	507,000
3. DSC	12,000	83,000	95,000
4. MaSC	6,000	43,000	49,000
5. MiSC	24,000	176,000	200,000
6. VCSC	9,000	67,000	76,000
7. NDSSS	41,000	220,000	261,000
8. BJC	13,000	92,000	105,000
9. LRJC	7,000	50,000	57,000
10. WC	6,000	43,000	49,000
11. BB	5,000	34,000	39,000
Total	$312,000	$1,800,000	$2,112,000

Source: Estimates from sample surveys at UND and DSC. See Statistical Supplement for standard errors.

Fraternity and Sorority Houses

The spending done by the fraternity and sorority houses at UND and NDSU for food, repairs, supplies and other items has not yet been counted. Since this study is primarily concerned with spending impacts in the local economy, the spending by fraternity and sorority members for room and board in the house was not considered in computing the average student expenditures for food and rent. However, the spending done by fraternities and sororities in purchasing food, supplies, furniture, utilities, etc. does affect the local economy. Thus, the fraternities and sororities at UND were surveyed to determine their spending in North Dakota.

It was estimated from the survey that UND and NDSU fraternities and sororities spent $342,000 on food and $158,000 on miscellaneous goods and services during the academic year 1973-74.

Summary

Visitors to students spent $2.1 million in North Dakota during the 1973-74 academic year while fraternities and sororities spent a total of $500,000 in North Dakota. The various alumni, athletic, social and cultural events that occur on North Dakota college and university campuses provide not only amenities to the people of North Dakota, but also are the catalysts for expenditures in the state.

CHAPTER 8

COLLEGE-RELATED IMPACT ON THE NORTH DAKOTA FINANCIAL SECTOR

Scope of the Financial Analysis

This chapter estimates the direct expansion of the local credit base attributable to college-related deposits in each North Dakota college town. The financial institutions considered are commercial banks, savings and loans, and credit unions. Deposits in these institutions by faculty, staff, students, and the colleges and universities provide an increase in the credit base in North Dakota. This creates an increase in funds available to North Dakotans for the purchase of goods on credit thus providing an impetus to sales by the North Dakota business sector. Again, the nature of this analysis should be noted. The implied assumption is that without North Dakota public colleges and universities, the students currently enrolled would be students in out-of-state institutions. They would take their deposits in North Dakota financial institutions with them. Thus, there would be outflow of deposits from North Dakota. Also, the implicit assumption is that faculty, staff and the institutional deposits currently in North Dakota would flow out of the state without the North Dakota public colleges and universities.

Methodology

Three college-related groups are studied with respect to their financial impact on North Dakota. These are the higher education

institutions, students, and faculty and staff. The deposits in North Dakota financial institutions are estimated from two sources. For five of the eleven institutions, the business offices provided information on deposits in North Dakota banks. Student, faculty and staff deposits were estimated from averages computed from survey responses. Total time deposits and demand deposits (checking accounts) were adjusted by the appropriate reserve requirement to estimate the direct expansion in the credit base attributable to college-related deposits.

College and University Deposits in Financial Institutions

Table 8-1 lists the deposits that the five responding public colleges and universities keep in financial institutions in North Dakota. These deposits are adjusted to yield the direct expansion in the areas' credit base. First, deposits in North Dakota private commercial banks are adjusted by the appropriate time or demand deposit reserve requirement. Reserve requirement ratios on commercial bank time deposits range from 3 to 5 percent of time deposits according to the volume of deposits in Federal Reserve member banks. A 4 percent reserve requirement was assumed for all time deposits in commercial banks.

Savings and loan institutions and credit unions in North Dakota were estimated to maintain a reserve ratio of their time deposits of 10 percent. This was approximately the average ratio of cash and security holdings to deposits for savings and loans nationwide.[1]

[1]See Federal Reserve Bulletin, May 1974, p. A34.

TABLE 8-1

COLLEGE AND UNIVERSITY DEMAND DEPOSITS IN
NORTH DAKOTA FINANCIAL INSTITUTIONS, FY 1973-74

Institution	(1) Average End-of-Month Demand Deposits: Bank of N. Dak.	(2) Private Commercial Banks	d_i	(3) = (2) X (1 - d_i) Increase in Credit Base/Month
1. UND	$ 831,591	$ 86,643	.1105	$ 77,069
2. NDSU	n/a	n/a	.1131	n/a
3. DSC	12,516	23,305	.0957	21,075
4. MaSC	88,209	n/a	.0917	n/a
5. MiSC	n/a	n/a	.1085	n/a
6. VCSC	n/a	n/a	.0964	n/a
7. NDSSS	n/a	n/a	.0973	n/a
8. BJC	n/a	12,688	.1143	11,238
9. LRJC	n/a	n/a	.0986	n/a
10. WC	n/a	77,778	.1037	69,712
11. BD	253,204	71,885	.0956	65,013
Total				$244,107

Source: Survey Data.

n/a indicates information not available

Average reserve ratios for demand deposits were calculated for each of the eleven college towns. As of May 1974, the demand deposit requirement for Federal Reserve Bank members was as follows:[2]

Demand Deposits ($ mil):	0-2	2-10	10-100	100-400	> 400
Required Reserve Ratio (%):	8	10 1/2	12 1/2	13 1/2	18

The actual required reserve ratio for each commercial bank in a college town was computed on the basis of its total deposits and the rates above. The average demand deposit required reserve ratio for all commercial banks in a town was then found by computing a weighted average of each bank's required reserve ratio, with the total demand deposits of each bank serving as the weights. Table 8-1 lists the "average" demand deposit reserve ratio for each college town.

Checks drawn on institutional deposits in the state-owned Bank of North Dakota expand the private credit base in several ways. First, most university and college checks drawn on the Bank of North Dakota for payroll, supplies, etc. are deposited in private commercial banks in North Dakota. These funds provide an increase in reserves for some private banks that are not associated with a corresponding decrease in other private bank reserves. Furthermore, the limited lending that the Bank of North Dakota does to special groups (e.g., student loans) also results in an increase in private commercial bank reserves. Both of these factors are reflected in student, faculty and staff deposits in commercial banks. On the other hand, the end-of-month deposits in

[2] See Federal Reserve Bulletin, May 1974, p. 379.

TABLE 8-2

COLLEGE AND UNIVERSITY TIME DEPOSITS IN
NORTH DAKOTA FINANCIAL INSTITUTIONS, FY 1973-74

Institution	(4) Average End-of-Month Time Deposits: Saving Account	(5) Certificate of Deposit	t_i	(6) = [(4) + (5)] X (1-t) increase in Credit Base
1. UND	n/a	n/a	.04	n/a
2. NDSU	n/a	n/a	.04	n/a
3. DSC	$240,117	**	.04	$230,512
4. MaSC	n/a	$7,681*	.04	7,374*
5. MiSC	n/a	n/a	.04	n/a
6. VCSC	n/a	n/a	.04	n/a
7. NDSSS	n/a	n/a	.04	n/a
8. BJC	n/a	381,989	.04	366,709
9. LRJC	n/a	n/a	.04	n/a
10. WC	40,833	142,329	.04	175,836
11. BB	n/a	n/a	.04	n/a
Total				$780,431

n/a indicates information not available.
** includes time deposits
* excludes Bank of North Dakota

the Bank of North Dakota have little influence on the credit base of the private sector in North Dakota since the Bank of North Dakota makes loans only to special groups. Further, the volume of these loans is not related to the volume of institutional deposits in the Bank of North Dakota.

Student, Staff and Faculty Deposits in Financial Institutions

Commercial Bank Deposits

Demand deposit and time deposit average monthly balances in commercial banks held by students, faculty and staff were estimated from survey responses from these groups at UND and DSC. The total monthly balances held by these groups and the corresponding increases in the credit base of each college town were computed on the basis of equation 8.1:

$$8.1\ CB_i = (1-t)\ [TD_i^F)\ X\ (F_i) + (TL_i^S)\ X\ (S_i)] + (1-d_i)\ [(DD_i^F)\ X\ (F_i) + (DD_i^S)\ X\ (S_i)]$$

Where, i = 1,2,3...,11 (the eleven cities with public colleges or universities)

CB_i = The expansion in the credit base of the i^{th} college town because of student, faculty and staff deposits in commercial banks

t = Reserve requirement ratio for time deposits (a constant .04 was used; the actual range is from 3-5 percent for Federal Reserve member banks)

TD^F = Average time deposits by faculty and staff in commercial banks of the i^{th} college town

F_i = Total number of full-time faculty and staff in the i^{th} college

TD_i^S = Average time depostis by students in commercial banks of the i^{th} college town

S_i = Total number of full-time students in the i^{th} college on a 12 month basis;

$$\frac{[9\left(\frac{\text{fall + spring enrollment}}{2}\right) + (2)\ \ (\text{summer enrollment})]}{12}$$

d_i = Weighted average reserve requirement ratio for demand deposits in the i^{th} college town (See Appendix C for computation of these ratios)

DD_i^F = Average demand deposit (checking account) monthly balance held by faculty and staff in the i^{th} college town

DD_i^S = Average demand deposits per month held by students in the i^{th} college town

The results of the computations using equation 8.1 are listed in Table 8-3. Although equation 8.1 may seem obtuse, it merely multiplies average checking account balances and saving account balances by the total number of students, faculty and staff to arrive at their total deposits in commercial banks.

Savings and Loans and Credit Unions

Time deposits held by students, faculty and staff in savings and loans and credit unions also provide an important source of credit to the people of each college town. This financial impact has been estimated from survey responses at UND and DSC as before. Equation 8.2 summarizes the method used. There is more variation in these estimates than for any other variable estimated. The

TABLE 8-3

STUDENT, FACULTY AND STAFF EXPANSION
OF COMMERCIAL BANKS' "CREDIT BASE"

Institution	(TD^F)	(TD^S)	(DD^F)	(DD^S)	Increase in Credit Base
1. UND	$737,000	$1,739,000	$ 522,000	$ 818,000	$ 3,569,000
2. NDSU	701,000	1,409,000	489,000	643,000	3,030,000
3. DSC	71,000	160,000	53,000	107,000	366,000
4. MaSC	41,000	76,000	31,000	54,000	190,000
5. MiSC	130,000	386,000	97,000	238,000	794,000
6. VCSC	52,000	118,000	39,000	85,000	275,000
7. NDSSS	197,000	663,000	137,000	322,000	1,240,000
8. BJC	61,000	194,000	46,000	112,000	385,000
9. LRJC	49,000	80,000	37,000	56,000	208,000
10. WC	29,000	89,000	22,000	53,000	181,000
11. BB	30,000	36,000	26,000	36,000	119,000
Total	$2,098,000	$4,950,000	$1,499,000	$2,524,000	$10,357,000

Source: Estimates from sample survey at UND and DSC. See Statistical Supplement for more detailed methodology and data.

mean time deposit values at savings and loan institutions vary considerably, from $562 at UND to $1,558 at VCSC. This variation can be partially accounted for by the higher faculty and administrator to staff ratio at VCSC and all the smaller colleges. However, much of the variation is because of sampling error.

8.2 $SL_i = (1-s) \times [[(TD_F^{S+L})_i \times (F)_i] + [(TD_S^{S+L})_i \times (S)_i] + [(TD_F^{CU})_i \times (F)_i] + [(TD_S^{CU})_i \times (S)_i]]$

(TD_F^{S+L}) = Average monthly time deposits in North Dakota savings and loan by faculty and staff of the i^{th} institution

$(F)_i$ = Number of faculty and staff at the i^{th} institution

$(TD_S^{S+L})_i$ = Average monthly time deposits in North Dakota Savings Loans by students at the i^{th} institution

$(S)_i$ = Number of full-time (12 month basis) students at the i^{th} institution ~~claim that scientific history~~

$(TD_F^{CU})_i$ = Average monthly time deposits in North Dakota credit unions by faculty and staff at the i^{th} institution

$(TD_S^{CU})_i$ = Average monthly time deposits in North Dakota credit unions by students at the i^{th} institution

S = 10% (the estimated reserves as % of deposits of savings and loan and credit unions)

SL_i = Average monthly expansion in the credit base of the i^{th} college town because of college-related deposits in savings and loans and credit unions.

Table 8-4 summarizes the results of the computations using equation 8.2 and lists the survey averages. Again, Equation 8.2 appears to be

complex but it merely multiplies average deposits at savings and loans and credit unions by the number of faculty, staff and student depositors to arrive at a total.

TABLE 8-4

STUDENT, FACULTY AND STAFF EXPANSION OF THE NORTH DAKOTA CREDIT BASE VIA SAVINGS AND LOANS AND CREDIT UNIONS, FY 1973-74

Institution	Increase in Credit Base
1. UND	$2,276,000
2. NDSU	2,059,000
3. DSC	220,000
4. MaSC	124,000
5. MiSC	416,000
6. VCSC	171,000
7. NDSSS	697,000
8. BJC	241,000
9. LRJC	152,000
10. WC	104,000
11. BB	100,000
Total	$6,560,000

Source: Estimates from sample surveys at UND and DSC. See Statistical Supplement for detailed methodology and data.

Summary of Financial Effects

The direct expansion in the credit base of North Dakota that is college-related is $17.94 million. The public institutions of higher education providing data contributed $1 million. Students, faculty and staff accounted for a direct increase in the credit base of approximately $16.9 million. As noted in the Statistical Supplement, the estimates of deposits in financial institutions are subject to a large margin of error. Especially acute is the upward bias that a few large responses has in the "average" time deposits of faculty and staff. Of all the estimates made, the time deposits are subject to the most cautious interpretation. Estimates of faculty and staff checking accounts and savings accounts were $350 and $1,000, respectively in the University of Pittsburgh Study done in 1971. The checking accounts for students were estimated at $160 per month in that Study. The checking account balances estimated for North Dakota faculty and staff range from $270 (UND) to $500 (VCSC) per month. On a comparative basis with the Pitt Study done in 1971, the checking account figures for North Dakota seem reasonable. On the other hand, the average savings in all financial institutions in North Dakota range from $1,250 (UND) to $2,360 (VCSC). The Pittsburgh Study indicated a $1,000 average in savings accounts. In this light, it appears that the UND average would be more reasonable. It is quite likely that a few high survey responses have biased upward the savings account estimates

for the North Dakota state colleges and junior colleges. On the other hand, only the direct or first round increase in the credit base was estimated above. The fractional reserve feature of the private banking system will result in a multiple expansion in loans and investments by commercial banks in North Dakota from this first round increase in the credit base. Thus, the direct increase in the credit base from university and college sources may be biased upward but the overall impact on the financial sector of college-related deposits is conservatively estimated by considering only the first round effects.

CHAPTER 9

COLLEGE AND UNIVERSITY IMPACT ON THE PUBLIC SECTOR

General Nature of the Analysis

One question this chapter attempts to answer is: Does the college or university represent a burden to the local government because of its tax exempt status? In this respect, the study first looks at the 1973 cost of providing municipal services to the institution, faculty, staff and students. Then, the local tax revenues attributable to the presence of the institution are estimated for 1973. Additional public costs are then weighed against the additional tax revenues attributable to the institution, its personnel and students. Also, state tax revenues from college-related sources are estimated.

College-Related Cost of Local Public Services

The cost side of this analysis is divided into two broad categories: the costs of local municipal services and the cost of public schools.

Costs of Local Municipal Services

The municipal services considered here are fire and police protection, streets and roads, parks, local government administration and other services not supported by local user fees. The method used to estimate the college-related cost of these services is given by equation 9.1. This reveals the college share of costs by computing the college-related population as a percentage of the city population and then multiplying this percentage by the city taxes required to finance

municipal services.

$$9.1 \quad OC^{cr} = [(CM)\ (TV)]\ X\ [(FH + SH) \div (POP)]$$

Where OC^{cr} = College-related operating costs of municipal services ($)

CM = City mill levy (including park boards)

TV = Taxable Value of the City = [(Market Value) X (Assessment Rates) X (Tax Factor)]

FH = Total number of persons in faculty and staff households

SH = Total number of persons in full-time student households

POP = Total population of the city

The values for each of these variables were obtained either from the city government or estimated from survey data (See Statistical Supplement). The results of this procedure for each college or university town are shown in Table 9-1. This procedure for estimating the college-related operating costs of municipal services is based on two assumptions. First, it is assumed that the cities established a city mill levy that will cover the costs of the services included here. Second, it is assumed that students, faculty, staff and their households use municipal services in direct proportion to their share of the total city population. Thus, they do not use city services any more or less intensively than the "average citizen" of a city.

Costs of Public Schools

The school costs considered in this section are those incurred by public elementary and secondary schools because of faculty, staff

TABLE 9-1

COLLEGE-RELATED OPERATING COSTS OF MUNICIPAL SERVICES

City	Mills[a] CM	$Mil[a] TV	FH[b]	SH[b]	POP[c]	OC[cr] (to nearest thousand)
Grand Forks	75.62	30.0	6,398	6,876	40,060	$641,000
Fargo	70.87	40.1	4,754	5,333	53,365	494,000
Dickinson	65.25	7.6	532	1,052	12,405	62,000
Valley City	58.01	4.3	327	931	7,843	40,000
Mayville	34.60	1.1	301	606	2,554	14,000
Minot	74.20	22.7	943	2,369	32,290	173,000
Devils Lake	58.18	4.9	326	601	7,078	38,000
Wahpeton	57.52	3.5	1,292	2,512	7,076	108,000
Bismarck	70.02	32.0	408	1,279	39,000	113,000
Williston	50.08	7.8	203	618	11,280	28,000
Bottineau	35.57	1.5	284	398	2,760	13,000
Total						$1,724,000

[a]Source: City Auditor for each city.

[b]Source: Estimates from sample surveys at UND and DSC. See Statistical Supplement for standard error.

[c]Source: 1970 Census of Population and Current Population Reports.

and students' children attending these schools. The procedure for estimating these costs is similar to that used in the preceding section and is illustrated in equation 9.2.

$$9.2 \quad LOC_{PS}^{cr} = [(SL)\ (TVS)] \times [CH_{PS}^{F} + CH_{PS}^{S}) \div CH_{PS}]$$

Where LOC_{PS}^{cr} = College-related operating costs of public schools to school districts

SL = School district mill levy

TVS = Taxable value of the school district

CH_{PS}^{F} = Children of faculty and staff attending public schools from kindergarten thru high school

CH_{PS}^{S} = Children of students attending public schools

CH_{PS} = All children in the school district attending public schools

Again, the value for each of these variables was obtained either from the school district or from survey data estimates. The results are shown in Table 9-2.

This method for estimating the college-related costs of public schools makes the assumption that the operating costs of public schools to the local school district increase in direct proportion to additional students. That is, the average cost of educating a student is the same as the marginal or additional cost of educating another student. The state aid to local school districts is a major source of funds for operating and capital costs at the local level. Each district received state aid on a per student basis. In 1973, there was a basic allowance of $540 per student, with each school receiving a percentage

TABLE 9-2

COLLEGE-RELATED OPERATING COSTS OF PUBLIC SCHOOLS TO LOCAL GOVERNMENT

School District	1973[a] Mills SL	1973[a] $Mil TVS	CH_{PS}^{F}[b]	CH_{PS}^{S}[b]	CH_{PS}	LOC_{PS} (to nearest thousand)
Grand Forks	101.1	32.2	1,659	272	10,584	$593,000
Fargo	130.6	41.8	1,313	232	10,167	829,000
Dickinson	86.46	10.4	177	75	2,577	88,000
Valley City	110.32	6.0	108	47	1,776	58,000
Mayville-Portland	88.49	4.7	100	30	798	63,000
Minot	85.91	24.6	314	165	9,326	108,000
Devils Lake	91.65	8.3	108	39	2,048	55,000
Wahpeton	73.70	7.2	357	97	1,586	151,000
Bismarck	100.6	33.5	135	117	8,497	101,000
Williston	92.86	8.0	67	52	3,074	29,000
Bottineau	82.39	3.5	94	5	942	31,000
Total						$2,106,000

[a]Source: North Dakota Public Instruction Department

[b]Source: Estimates from sample surveys at UND and DSC. See Statistical Supplement for standard error.

TABLE 9-3

1973 DISTRIBUTION OF PUBLIC COSTS
OF EDUCATION: STATE AND LOCAL

School District	1973-74[a] Actual School Mill Levy	1973-74[a] County and State Funds
Grand Forks	$3,259,257	$4,565,..25
Fargo	5,455,974	4,301,627
Dickinson	899,885	1,254,349
Valley City	662,491	832,075
Mayville-Portland	384,758	371,244
Minot	2,116,581	4,289,165
Devils Lake	757,946	1,005,600
Wahpeton	527,536	812,613
Bismarck	3,355,662	3,970,561
Williston	743,599	1,535,275
Bottineau	292,418	507,250

[a]Source: North Dakota Department of Public Instruction.

of the basic allowance per student. Generally, smaller rural schools received over 100% of the basic allowance per student and the larger urban schools received less than 100% of the basic allowance per student.

On this basis, each school district received state and county aid on a per pupil basis. Some districts also received transportation aid from the state. Pupil and transportation aid received by each district for the 1973-74 school year are listed in Table 9-3. The college-related costs of public schools to the state and county government can be estimated by a procedure similar to the local government method. This procedure is summarized in equation 9.3.

$$9.3 \quad SOC_{PS}^{cr} = [SF] \times [(CH_{PS}^{F} + CH_{PS}^{S}) \div CH_{PS}]$$

Where SOC_{PS}^{cr} = College-related operating costs of public schools to state and county government.

SF = State and county funds for local school districts

and CH_{PS}^{F}, CH_{PS}^{S}, and CH_{PS} are as defined before for equation 9.2. Here, the college-related public school students as a percentage of all public school students determine the share of the state and county costs of elementary and secondary education. The estimates of state and county costs are listed in Table 9-4 as are the costs to local government and total state and local funds needed for public schools because of the college-related population in each city.

TABLE 9-4

COLLEGE-RELATED OPERATING COSTS OF PUBLIC SCHOOLS TO STATE AND LOCAL GOVERNMENT AND TOTAL STATE AND LOCAL COSTS, 1973

School District	SOC_{PS}^{cr}	LOC_{PS}^{cr}	Total State and Local
Grand Forks	$831,000	$593,000	$1,424,000
Fargo	654,000	829,000	1,483,000
Dickinson	123,000	88,000	211,000
Valley City	72,000	58,000	130,000
Mayville-Portland	61,000	63,000	124,000
Minot	219,000	108,000	327,000
Devils Lake	72,000	55,000	127,000
Wahpeton	232,000	151,000	383,000
Bismarck	119,000	101,000	220,000
Williston	60,000	29,000	89,000
Bottineau	53,000	31,000	84,000
Total	$2,496,000	$2,106,000	$4,602,000

Source: Prior Tables.

College-Related Sources of State and Local Tax Revenues

This section estimates the various tax revenues received by state and local governments in North Dakota from the institutions of higher education, its personnel and students. The local taxes considered are the property tax and special assessments. State taxes estimated are the sales tax, state gasoline excise tax, state personal income tax and auto registration fees.

Local Tax Revenues

There are two aspects of this analysis. First, the property tax and special assessments paid by the institution, its personnel and students are estimated from survey data. Second, the real estate taxes foregone because of the largely tax exempt status of the college or university are estimated. The detailed methodology for estimating each tax revenue is given in the Statistical Supplement.

College-Related Property Taxes

The institutions of higher education affect property tax revenues in several ways. Although they are exempt from the real estate tax as non-profit institutions, they do pay special assessments. These have been listed in Table 9-6 for those institutions providing data. A significant influence on real estate tax revenue for local government is the effect that the institution has on surrounding property values and thus the property tax base. A quantification of the impact of the university or college on the local tax base would require a

detailed analysis of the tax and assessment history of the college or university ward vis à vis other wards in the college or university town. Moreover, this would have to be done for each college or university location in the state. This report can only note this effect without attempting to quantify it.

However, some evidence of this impact may be inferred from the increase in population in university and college cities over the past forty years relative to the rest of the state. Although there are many causes for this trend, the presence of a college or university does draw students, faculty, staff and other residents into the community. The population trends are listed in Table 9-5. As can be seen, the eleven cities with a college or university have had a generally rising population whereas the state has lost population.

The real estate taxes that are paid by college and university staff and faculty have been estimated from survey data, and are listed in Table 9-6. Property taxes and special assessments paid by faculty and staff were estimated from an average computed from sample survey responses at UND and DSC. The methodology and standard errors of the estimates are given in the Statistical Supplement.

To estimate the real estate taxes paid by students, it was necessary to use a more indirect method. First, the survey indicated little real estate tax revenue is generated by students since over 98% of the UND students and DSC students did not own their own home. Nevertheless, about 24% of UND students and 26% of DSC students

TABLE 9-5

POPULATION AND POPULATION TRENDS FOR SELECTED NORTH DAKOTA CITIES

Institution - City	1930	1940	1950	1960	1970	% Δ 1930-40	% Δ 1940-50	% Δ 1950-60	% Δ 1960-70
UND - Grand Forks	17,112	20,228	28,836	34,451	39,008	18.2	42.6	19.5	13.2
NDSU - Fargo	28,619	32,580	38,256	46,662	53,365	13.8	17.4	22.0	14.4
DSC - Dickinson	5,025	5,839	7,469	9,971	12,405	16.2	27.9	33.5	24.4
VCSC - Valley City	5,268	5,917	6,851	7,809	7,843	12.3	15.8	14.0	.4
LRJC - Devils Lake	5,519	6,204	6,427	6,299	7,078	12.4	3.6	(-2.0)	12.4
BJC - Bismarck	11,099	15,496	18,640	27,760	34,703	39.6	20.3	48.9	25.3
WC - Williston	5,106	5,790	7,378	11,866	11,280	13.4	27.4	60.1	(-4.9)
MaSC - Mayville	1,199	1,351	1,790	2,168	2,554	12.7	32.5	21.1	17.8
MiSC - Minot	16,099	16,577	22,032	30,604	32,290	3.0	32.9	38.9	5.5
NDSSS - Wahpeton	3,176	3,747	5,125	5,876	7,076	18.0	36.8	14.7	20.4
BB - Bottineau	1,322	1,739	2,268	2,613	2,760	31.5	30.4	15.2	5.6
TOTAL (11 Cities)	99,544	115,468	145,072	186,079	210,362	16.0	25.6	28.3	13.1
STATE	680,845	641,935	619,636	632,640	617,761	(-5.7)	(-3.5)	2.1	(-2.4)
State less 11 city total	581,301	526,467	474,564	446,561	407,399	(-9.4)	(-9.9)	(-5.9)	(-8.8)

Source: Census of Population, Bureau of the Census, U. S. Department of Commerce.

rented apartments. Thus, it was necessary to estimate the property taxes that students were paying through their rental payments. It was assumed that landlords shift their property taxes on rental property forward to the renters. Thus, it was necessary to estimate the percentage of a rental payment that is used to pay property taxes. This percentage may vary widely but Dick Netzer in the Economics of the Property Tax has estimated that real estate taxes as a percentage of rental receipts range from 17 to 20 percent, depending on the type of rental unit. We make the assumption that only 10 percent of the rental payment can be allocated to cover local property taxes. Thus, 10 percent of the rental payments by students, faculty, and staff are estimated to contribute to the local real estate tax and special assessments of local government. These also are listed in Table 9-6 for each college or university location. A final source of college-related property tax revenues is the special assessments that are paid by fraternities and sororities at the two universities. These are also listed in Table 9-6.

Real Estate Taxes Foregone Because of the Tax-Exempt Status of the University and College Property

The approach in this section of analysis is to estimate the real estate taxes on land owned by the colleges and universities that would be paid if the tax-exempt status was withdrawn from these institutions. The total (1972) estimated land value of all university or college

TABLE 9-6

COLLEGE-RELATED PROPERTY TAX REVENUES

Institution	Faculty & Staff Home Owners: Real Estate Tax	Faculty & Staff Home Owners: Special Assessment	Faculty and Staff Renters Total Property	Student Renters Total Property	Institution Special Assessments	Fraternity & Sorority Special Assessments	Total
1. UND	$ 667,000	$ 146,000	$ 148,000	$ 170,000	$ 84,000	$ 14,000	$1,229,000
2. NDSU	557,000	155,000	99,000	143,000	n/a	10,000	964,000
3. DSC	53,000	6,000	2,000	17,000	n/a	-	78,000
4. MaSC	30,000	4,000	1,000	5,000	n/a	-	40,000
5. MiSC	95,000	11,000	4,000	42,000	n/a	-	152,000
6. VCSC	35,000	5,000	2,000	14,000	n/a	-	56,000
7. NDSSS	153,000	33,000	8,000	85,000	90,038	-	369,038
8. BJC	43,000	5,000	2,000	9,000	5,283	-	64,283
9. LRJC	34,000	4,000	1,000	3,000	n/a	-	42,000
10. WC	21,000	3,000	1,000	8,000	-	-	33,000
11. BB	27,000	3,000	1,000	1,000	-	-	32,000
Total	$1,715,000	$375,000	$ 269,000	$ 497,000	$179,321	$ 24,000	$ 3,059,321

Source: Estimates from sample survey at UND and DSC.
n/a indicates the information was not supplied by the institution.

land was $5.8 million. From this land, the local taxing authorities could have derived $185,000 in tax revenue if it had been privately held. The tax revenue foregone was computed by reducing the market value of the land to its assessed value by using the city assessment ratio for each college or university town. Then the assessed value was reduced by the tax factor (50%) to its taxable value. Taxable value times the appropriate mill rate yields the property tax revenue foregone. Table 9-7 presents the results of this analysis.

A second area of potential real estate taxes foregone is the value of the buildings that might have been built on the land currently occupied by the colleges and universities. This was not considered important to the North Dakota cities involved because the space in these cities available for residential, commercial or industrial development is not seriously constrained by the land used by the university or college. Thus, development that could have occurred on what is now university or college land has been shifted to other geographical areas in the city. Thus, there is no loss in real estate taxes. The distribution of real estate tax revenue has merely been shifted from the university or college ward to other areas in the city. Nevertheless, if colleges and universities did pay taxes on the value of the buildings they currently own, these would generate about $3.6 million in property taxes in the state. This estimate was derived using the 1972 replacement costs

TABLE 9-7

COLLEGE-RELATED PROPERTY TAXES FOREGONE
BY LOCAL GOVERNMENT

Institution	1972[a] $ Value of Land Holding	1973 Assessment[b] Ratio	Tax[b] Factor	1973[b] Mill Levy	1973 Property Taxes Foregone
1. UND*	$ 488,350	.23	.5	226.60	$15,723
2. NDSU*	4,104,125	.228	.5	250.54	140,233
3. DSC	82,700	.21	.5	210.13	1,825
4. MaSC	107,136	.20	.5	192.88	2,066
5. MiSC	111,750	.2369	.5	208.49	2,760
6. VCSC	221,000	.21	.5	245.17	5,689
7. NDSSS	404,703	.23 (est.)	.5	208.89	9,722
8. BJC	160,720	.2353	.5	213.76	4,042
9. LRJC	17,000	.20	.5	241.29	410
10. WC	80,000	.20	.5	213.18	1,705
11. BB	70,000	.192	.5	182.16	1,224
Total	$5,847,484				$185,399

* Excludes research farms and biological research areas held by NDSU and UND more than 1 mile from campus.

[a]Source: Physical Facilities at Institutions of Higher Education, by North Dakota Higher Education Facilities Commission, Fall, 1972.

[b]Source: North Dakota State Auditors

of college and university buildings, as the market value of the buildings. Assessment ratios and the tax factor reduce this to taxable value.

The college-related local property tax revenues are $3,059,000. If these revenues are reduced by the $185,000 in land property taxes foregone through the tax-exempt status of the universities and colleges, the net local tax revenue generated by college sources is $2,874,000.

College-Related State Tax Revenues

The taxes estimated are the state sales tax, state personal income tax, state gasoline taxes, and auto registration fees. Federal revenue sharing funds that accrue to North Dakota because of out-of-state students being counted as North Dakota residents are also estimated.

The State Sales Tax

Sales taxes generated by institutional spending were reported on a survey form received from each of the institutions providing data. These are listed in Table 9-8. Students, staff, and faculty also generate sales tax revenues when making purchases of taxable goods and services. These were estimated in three steps:

1. Obtain an estimate of spending on goods and services in North Dakota by students, staff and faculty. This was accomplished by summing the survey estimates of other purchases, grocery purchases and other housing purchases

TABLE 9-8

COLLEGE-RELATED SALES TAX REVENUES FOR 1973

Institution	(1) Taxable Sales Total Sales	(2) Sales Taxes Paid by Students	(3) Sales Taxes Paid Faculty & Staff	(4) Sales Tax From Institution	Total 1973 College-Related Sales Tax
1. UND	.5023	$151,000	$136,000	$41,000	$328,000
2. NDSU	.4456	113,000	95,000	n/a	208,000
3. DSC	.5054	14,000	13,000	n/a	27,000
4. MaSC	.4172	7,000	6,000	n/a	13,000
5. MiSC	.5191	25,000	29,000	n/a	54,000
6. VCSC	.5118	10,000	13,000	n/a	23,000
7. NDSSS	.4339	30,000	42,000	19,515	91,515
8. BJC	.4972	11,000	13,000	-	24,000
9. LRJC	.5054	9,000	7,000	n/a	16,000
10. WC	.3446	4,000	5,000	1,065	10,065
11. BB	.4530	6,000	4,000	1,099	11,099
Total		$380,000	$363,000	$62,679	$805,679

n/a indicates this information was not supplied by the institution.

(mainly utilities and miscellaneous repairs) by each of these groups. Grocery purchases are not subject to the North Dakota sales tax and are effectively eliminated in step 2.

2. Estimate the ratio: (taxable sales and purchases/total sales and purchases) for each of the eleven cities. The data for these ratios were obtained from the North Dakota Sales and Use Tax Statistical Report, 1973. The North Dakota sales tax has a variety of exemptions. A partial list of the important exemptions of goods and services that are likely to be purchased by students, staff and faculty groups include: food at grocery stores, transportation services, textbooks, drugs, gasoline, insurance premiums, hospital services, personal services (medical, dental, auto repair, laundry, shoe repair, newspapers, barbers and beauty shops, watch and jewelry repair and upholstering) and autos, campers, etc. that are subject to the excise tax.
3. The final step in this procedure is to estimate the sales tax revenues by applying the 4 percent sales tax rate to the dollar value of taxable goods and services purchased by students, faculty and staff. The results of this procedure are summarized in Table 9-8.

State Income Taxes

The personal income taxes paid by faculty and staff at North Dakota colleges and universities were estimated directly from payroll

records for the institutions providing data. These are listed in Table 9-9. Income taxes paid by students are not considered since this study only measures the impact of full-time students and it is assumed that full-time students are not simultaneously working at jobs that would require payment of state income taxes.

Other College-Related Tax Revenue and Fees

State gasoline taxes that are generated by students and college-related personnel are estimated from equation 9.3.

9.3 $[(\text{Miles}) \div (\text{MPG})] \times (.07) = \text{Gas Tax}$

Where miles = the total miles per academic year driven by students and per year by faculty and staff in their private cars. Estimates were made from survey responses.

MPG = miles per gallon, assumed to be 15 miles per gallon

.07 = state excise tax per gallon of gasoline

Gas Tax = college-related state gas tax revenues

Table 9-10 lists the results of these computations for students, faculty and staff at each institution. The Statistical Supplement contains detailed methodology and the standard errors of these estimates.

Automobile registration fees paid by faculty, staff and students are also listed in Table 9-10. These were estimated from average (mean) auto registration fees computed from survey responses.

TABLE 9-9

COLLEGE-RELATED STATE INCOME TAXES

Institution	Faculty and Staff State Income Taxes
1. UND	$242,565
2. NDSU	175,132[a]
3. DSC	14,123
4. MaSC	1,694
5. MiSC	27,652[a]
6. VCSC	9,703[a]
7. NDSSS	27,097
8. BJC	11,083
9. LRJC	9,703[a]
10. WC	*
11. BB	3,259
Total	$522,011

* WC is included in UND total.

[a]Estimated from (ratio of faculty and staff at the institution to faculty and staff at UND) X (UND taxes)

Source: Business office of each institution.

Total miscellaneous licenses and taxes paid to state, county or city governments in North Dakota by the institutions are also listed in Table 9-10. An additional source of college-related revenues accruing to state and local government is the Federal revenue sharing funds that are drawn into the state by out-of-state students enrolled in North Dakota colleges and universities. Using the "3-Factor Formula" to allocate each state's share of total Federal revenue sharing funds, the revenue sharing accruing to North Dakota was found to be approximately $154,000.

This assumed that in 1970 of the 3,900 out-of-state students enrolled in North Dakota's colleges, 460 students lived with relatives in the Minnesota "sister cities" of East Grand Forks, Moorhead and Breckenridge. These students were not considered residents of North Dakota for revenue sharing purposes. Thus, the revenue sharing estimates were made on the basis of 3,440 out-of-state students being considered North Dakota residents for revenue sharing purposes. (See the Statistical Supplement for detailed methodology.)

College-Related Costs of Local Government Services Versus College-Related Tax Revenues

The objective of this chapter was to determine if college-related tax revenues accruing to local governments are sufficient to cover the costs of providing municipal services to the institutions, faculty, staff and students. The operating costs to local governments of college-related use of municipal services and public schools were approximately $3.8 million. On the other hand, local college-related tax revenues were estimated at $2.9 million. Thus, there appears to

TABLE 9-10

MISCELLANEOUS COLLEGE-RELATED TAXES AND FEES, 1973

Institution	State Gasoline Taxes in N.D.			Auto Registration Fees Paid in N.D.			Misc. Fees and License Paid By Institution	
	Student	Faculty & Staff	Total	Student	Faculty & Staff	Total		
1. UND	$ 98,000	$131,000	$229,000	$ 99,000	$ 68,000	$167,000	$ 2,231	
2. NDSU	71,000	101,000	172,000	12,000	6,000	18,000	n/a	
3. DSC	6,000	15,000	21,000	96,000	52,000	148,000	n/a	
4. MaSC	4,000	7,000	11,000	7,000	3,000	10,000	n/a	
5. MiSC	12,000	30,000	42,000	24,000	10,000	34,000	n/a	
6. VCSC	4,000	13,000	17,000	12,000	4,000	16,000	n/a	
7. NDSS	19,000	45,000	64,000	36,000	14,000	50,000	100	
8. BJC	5,000	14,000	19,000	10,000	5,000	15,000	n/a	
9. LRJC	4,000	7,000	11,000	6,000	4,000	10,000	n/a	
10. WC	3,000	8,000	11,000	7,000	2,000	9,000	72	
11. BB	3,000	5,000	8,000	5,000	3,000	8,000	159	
Total	$229,000	$376,000	$605,000	$314,000	$171,000	$485,000	$2,512	$1,092,512

Source: Estimated from survey responses at UND and DSC.

n/a indicates this information was not supplied by the institution.

TABLE 9-11

A SUMMARY OF TOTAL COLLEGE-RELATED TAX REVENUES

Local		
Property taxes and special assessment	$3,059,000	
Less: Real Estate Taxes Foregone because of tax exempt status of colleges and universities	185,000	
Total Net Local		$2,874,000
State		
Sales Taxes	$ 806,000	
State Income Tax	522,000	
Miscellaneous Taxes and Fees	1,093,000	
Revenue Sharing Funds	154,000	
Total State		$2,575,000
Total State and Local		$5,449,000

be a $900,000 "net burden" to local taxpayers in North Dakota. However, further considerations lend support to the conclusion that universities and colleges do not represent a net burden to local government. First, the university or college has a positive effect on surrounding property values. The corresponding increase in the property tax base has only been mentioned, not quantified.

Second, estimates of operating costs of municipal services and public schools are made on the basis of average coefficients. The additional costs of these public services attributable to students, faculty and staff should be based on marginal coefficients. Marginal coefficients would increase only the change in public service costs attributable to the additional college-related population. These marginal coefficients are likely to be less than their average counterparts if the physical capital required to provide these services is currently available. Thus, only the additional costs of providing services to the college-related population should be considered. For example, if UND hired 25 additional faculty each with two school-age children, then only the additional costs of providing education to these children should be considered. If this required an additional two teachers for the 50 children, then only the wages paid to these additional teachers can be attributed to the 50 children. The other costs, such as interest on bonds, lights, heating, etc., will be incurred regardless of whether

the additional 50 children are in the schools. The average coefficients are readily available but overstate the cost of providing public services since they include fixed costs.

In addition, college-related state tax revenues of $2.6 million were generated in 1973. However, an estimate of state costs attributable to faculty, staff and students was beyond the scope of this study.

The major conclusion to be drawn is that college-related costs of community services are undoubtedly offset by college-related tax revenues. Thus, there appears to be no net burden to local government despite the tax-exempt status of the institutions of higher education.

CHAPTER 10

SUMMARY AND CONCLUSIONS

The objective of this study has been to ascertain the impact of North Dakota's institutions of higher education on the state's economy. It was found that, besides their primary mission of providing high-quality education to the students of the state, the eleven colleges and universities represent an important "industry" to North Dakota. This industry generates substantial income to the businesses and people of the state. This spending, in turn, generates jobs for persons outside the institutions.

Impact on the Business Sector

Total college-related spending in North Dakota was $76 million during the 1973-74 school year. In purchasing supplies, materials, equipment, buildings and the services of North Dakota businesses, the eleven colleges and universities spent $23.2 million in the state. This was approximately 59 percent of the total spending by those institutions. Thus, the institutions have purchased the majority of their inputs from North Dakota businesses as opposed to out-of-state firms.

The spending by faculty and staff in North Dakota was also found to be an important source of income for the state. Faculty and staff spent a total of $26 million in the state during the year 1973-74. Of this amount $8.3 million was spent on housing in the state; $6.2 million was spent on groceries in the state;

and $11.5 million was spent on other goods and services in the state. Moreover, the faculty and staff purchased public services through their state and local taxes. Faculty and staff spending of $26 million in the state was found to be about 95 percent of their total spending. Thus, nearly all after-tax salaries and wages paid to the faculty and staff of the eleven public institutions of higher education are returned to the economy of the state.

Of the three groups (institutions, faculty and staff, and students) considered in this study, students had the largest impact on the economy of the state. The eleven institutions had 22,401 full-time students during the 1973-74 school year. These students spent approximately $28 million in North Dakota during that year. Of that amount, $5 million was spent in the private housing market; $9.3 million was spent on groceries and $13.7 million on other goods and services from North Dakota firms. As was the case with the institutions and with faculty and staff, the students allocated the overwhelming amount of their spending in the state -- 93 percent.

As some of the faculty, staff and student spending was done at auxiliary enterprises on campus, total faculty, staff and student spending of $54 million was reduced to $50 million.

Finally, visitors to students spent $2.1 million in North Dakota and the fraternities and sororities spent $1.2 million in the state.

A frequently raised question by residents of a state concerns whether the state appropriations to higher education are a worthy investment. Although it was beyond the scope of this study to quantify the human capital benefits of higher education, the state appropriations were compared with the college-related spending to determine if higher education created a financial burden on the economy of North Dakota. Table 10-1 reveals that the state appropriated about $36 million in support of higher education during FY 1973-74. However, the table also shows that college-related spending amounted to $76 million.

Thus, for each $1 the state contributed to higher education, the colleges and universities returned $2.10 to the economy of North Dakota.

Interestingly, each of the eleven schools studied returned more to the state than their state aid. The relatively high proportion of college-related spending to state aid for the two junior colleges was expected as they receive funds from other public sources. The relatively high ratio of 2.6 for UND reflects the unusually high amount of construction undertaken by UND in the 1973-74 fiscal year for which state appropriations were not employed. Nevertheless, even reducing UND in-state construction spending by $5 million, its ratio of college-related spending to state aid would have been 2.2. A note of caution is necessary at this point. A relatively high (or low) ratio of spending to state aid for one school should not be interpreted as meaning that the school is relatively more (or less) efficient in its use of state funds than another school. Undoubtedly, the ratios for the schools will vary in different years as more or less construction is undertaken, as the schools receive gifts or due to other factors.

TABLE 10-1

COMPARISON OF STATE APPROPRIATIONS TO COLLEGE-RELATED SPENDING IN NORTH DAKOTA, 1973-74 SCHOOL YEAR[a]

Institution	State Appropriations			College-Related Spending				
	General State Appropriations	Expenditures from State Appropriations from Plant Fund	Total State Aid	Non-salary Institutional Spending	Students, Faculty & Staff Spending (less spending on Campus)	Visitors to Students Fraternity & Sorority Spending	Total Spending in N.D.	Ratio of Spending to State Aid
1. UND	$10,531,463	$ 946,317	$11,477,780	$11,427,066	$17,476,000	$ 952,000	$29,855,066	2.6
2. NDSU	11,483,975	1,102,722	12,586,697	5,541,870	14,097,000	729,000	20,367,870	1.6
3. DSC	1,316,574	154,737	1,471,311	349,744	1,993,000	95,000	2,437,744	1.7
4. MiSC	963,495	96,000	1,059,495	354,188	991,000	49,000	1,394,188	1.3
5. MiSC	3,281,475	53,750	3,335,225	1,402,201	4,121,000	200,000	5,753,201	1.7
6. VCSC	1,346,940	71,125	1,418,065	615,901	1,639,000	76,000	2,330,901	1.6
7. NDSSS	2,827,290	176,955	3,004,245	1,813,391	4,893,000	261,000	6,967,391	2.3
8. [illegible]	542,985	0	542,985	990,120	1,965,000	105,000	3,060,120	5.6
9. LRJC	303,491	0	303,491	164,867	1,007,000	57,000	1,228,867	4.0
10. WC	447,276	0	447,276	199,880	1,032,000	49,000	1,281,880	2.9
11. BB	453,668	63,964	517,632	384,205	750,000	39,000	1,173,205	2.3
Total			$36,164,202	$23,243,513	$49,995,000	$2,612,000	$75,850,513	2.1

Source: Survey data and previous tables.

[a]Institutional spending was for the fiscal year 1973-74 (July 1 - June 30) and the faculty, staff and student spending was for the Academic Year 1973-74.

Besides the 4,585 full-time jobs at the colleges and universities, the 76 million of college-related spending along with an income multiplier of 2 generated about 10,600 jobs in the state. These jobs are in addition to on-campus employment. This estimate is based on a conservative figure of 70 jobs for every $1 million of spending (see the aforementioned University of Pittsburgh Study, p. 12).

Impact on the North Dakota Financial Sector

Although data limitations and sampling errors did not permit as much precision in the financial analysis as was possible in the spending analysis, college-related sources appear to be an important source of credit in North Dakota.

Specifically, the demand and time deposits of the five responding colleges and universities have expanded the credit base of the state by about $1 million. In addition, student, faculty, and staff deposits in commercial banks were estimated to have expanded the credit base by $10.3 million. Moreover, those groups expanded the credit base of the state by an additional $6.6 million through their deposits in North Dakota savings and loan associations and credit unions.

Impact on the Public Sector

Due to their tax-exempt status, a frequently voiced concern is whether the colleges and universities represent a fiscal burden to their local communities. This study found that such a burden is unlikely.

The college-related operating costs of municipal services and schools in the eleven communities where the schools are situated were found to be approximately $3.8 million. The cities were found to have foregone $185,000 in property taxes on college and university land. However, the property taxes paid to the local communities by students, faculty and staff and the institutions were $2.9 million in fiscal year 1973-74. Thus, there appears to be a $900,000 "net burden" to local taxpayers in North Dakota. However, this is undoubtedly more than offset by the increase in land values in the local communities due to the presence of the colleges and universities.

In addition to county and local taxes, the colleges and universities and their faculty, staff and students were found to have paid $2.6 million in state taxes, although it was not possible to quantify the college-related costs of state government.